Interventions to Improve Breastfeeding Behaviors: Detailed Summaries of 51 Studies

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User's Guide

Introduction

This document provides one to two page summaries of the available research from 51 studies on specific interventions intended to influence four key breastfeeding behaviors:

- Early initiation of breastfeeding (ideally within the first hour after birth)
- Feeding of colostrum to the newborn
- Exclusive breastfeeding for the first 0-6 months
- Continued breastfeeding through the second year and beyond.

These four behaviors are strongly linked to the prevention of infant malnutrition and illness. The findings of the studies reviewed are discussed in a separate LINKAGES' publication titled *Improving Breastfeeding Behaviors: Evidence from Two Decades of Intervention Research* (Green, 1999).

Studies were identified through database searches by the staff of LINKAGES' Information Resource Center, telephone conversations with experts, and a review of Wellstart International publications and the bibliographies of relevant studies. Through this review of articles in English, French and Spanish published between 1978 and 1998, 51 studies were identified that used specific interventions or combinations of interventions to improve at least one of the four key breastfeeding behaviors.

Although hundreds of studies were examined, most were excluded because they failed to provide both: (1) information on specific interventions implemented to change breastfeeding practices and (2) data on changes in at least one of the four breastfeeding behaviors over time or among groups receiving different treatment regimens. Most studies did not report indicators of nutritional status — the ultimate test of effective impact.

Of the 51 projects reviewed, 24 were in Latin America and the Caribbean, 9 in Asia, 4 in sub-Saharan Africa, 3 in the Near East, 1 in the Newly Independent States, and 10 in Europe and the United States.

Many of the studies reviewed had shortcomings in their research design such as the lack of an appropriate control group or baseline behavioral measurements, small sample size, self-selection of participants and high attrition (drop-out or loss to follow-up). Due to the scarcity of well-designed and well-executed studies on breastfeeding interventions, any study that met the basic criteria was retained.

Organization

Summaries of the 51 studies are organized by behavior:

Section 1: Early Initiation
Section 2: Feeding Colostrum
Section 3: Exclusive Breastfeeding
Section 4: Continued Breastfeeding

A table listing studies that attempt to influence the behavior featured in the section is found at the beginning of the section. Studies are grouped by study design:

> Study Design A. Studies comparing intervention and control or comparison groups before and after the intervention (29 percent of the studies)
>
> Study Design B. Studies comparing intervention and control or comparison groups (no baseline) (38 percent of the studies)
>
> Study Design C. Studies comparing the same group(s)

before and after the intervention (no control group) (33 percent of the studies).

Within these three categories, studies are arranged alphabetically by country, with developing countries followed by developed countries.

The pre-post design with a control group (type A) is the most rigorous of these designs. Readers should place the greatest weight on evidence provided in type A studies. Study types B and C are seriously flawed. Without baseline data (type B), we do not know that the control group is really comparable with the intervention group. Without a control group (type C), we cannot be certain that factors other than the intervention may have led to changes in behavior.

All studies reviewed have some deliberate intervention (i.e. they are experimental). Nearly all of the studies reviewed are quasi-experiments, in which some manipulation or intervention is examined. Only seven studies are true experiments, with randomization of treatment among subjects: Dungy et al., 1992/U.S.A.; Frank et al., 1987/U.S.A.; Haider et al., 1996/Bangladesh; Langer et al., 1996/Mexico; Neyzi et al., 1988/Turkey; Rivera et al., 1993/Honduras; Waldenström and Nilsson, 1994/Sweden; these studies are all type A.

The tables at the beginning of each section also indicate which of the following nine interventions were used to influence breastfeeding behaviors:

Prenatal education
Hospital policies/actions
Health worker training
Peer counseling
Mass media
Women's groups
Home visits
Community education
Postpartum clinics

The last column notes the page number where the study is annotated within the section. Some studies attempted to affect more than one behavior. In these cases, the summaries appear in all of the appropriate sections.

Listed on the following pages are articles reporting on the studies reviewed and a table showing which of the four behaviors are the subject of the studies.

Studies Reviewed

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Breastfeeding. British Journal of Obstetrics and Gynaecology. 98 (August 1991):756-764.

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Breastfeeding Behaviors Examined

			BREASTFEEDING BEHAVIORS			
Reference	**Country**	**Study Group**	**Early Initiation**	**Feeding Colostrum**	**Exclusive Breastfeeding**	**Continued Breastfeeding**
AHLACMA, 1993	Honduras	A			/	
Alvarado et al., 1996	Chile	A			/	
Barros et al., 1995	Brazil	B			/	
Bradley & Meme, 1992	Kenya	C	/	/		/
Burkhalter & Marin, 1991	Chile	C			/	
Clavano, 1982	Philippines	C		/		
Creed-Kanashiro et al., 1994 and 1995	Peru	C			/	
Dungy et al., 1992	U.S.A.	A			/	
Frank et al., 1989	U.S.A.	A			/	
Gerung, 1989	Indonesia	B	/	/		
Gottert, 1995; Ross, 1997	Mali	A		/	/	
Griffiths, 1991; Zeitlin et al., 1989	Indonesia	A		/		
Haider et al., 1996	Bangladesh	A			/	
Hofmeyr et al., 1991	South Africa	B			/	
Holley-Newsome, 1995	Armenia	C	/			
Huffman, 1991	Panama	C	/		/	
IMSS, [no date]	Mexico	C			/	
Kistin et al., 1994	U.S.A.	B	/		/	

Breastfeeding Behaviors Examined, Continued

			BREASTFEEDING BEHAVIORS			
Reference	**Country**	**Study Group**	**Early Initiation**	**Feeding Colostrum**	**Exclusive Breastfeeding**	**Continued Breastfeeding**
Lal et al., 1992	India	C	/			
Langer et al., 1996	Mexico	A	/		/	
Lutter et al., 1997	Brazil	B			/	
Manoff International, 1984	Indonesia	B			/	
McDivitt et al., 1993	Jordan	C	/			
MkNelly, 1997	Ghana	A		/		
Morrow et al., 1996	Mexico	B			/	
NCP, 1995; Hernandez et al., 1995	Honduras	C			/	
NCP, 1995b; Altobelli, 1993	Peru	A			/	
Neyzi et al., 1988; Neyzi et al., 1991a	Turkey	A			/	
Neyzi et al., 1991b	Turkey	A			/	
Nylander et al., 1991	Norway	C			/	
Popkin et al., 1991; Huffman et al., 1991	Honduras	C			/	
Popkin et al., 1991	Honduras	C	/			/
Prasad & Costello, 1995	India	B	/	/		
Rea & Berquó, 1990	Brazil	C			/	
Righard & Alade, 1990	Sweden	B	/			
Rivera et al., 1993	Honduras	A			/	

Breastfeeding Behaviors Examined, Continued

			BREASTFEEDING BEHAVIORS			
Reference	**Country**	**Study Group**	**Early Initiation**	**Feeding Colostrum**	**Exclusive Breastfeeding**	**Continued Breastfeeding**
Rodriguez-Garcia et al., 1990	Mexico	B			/	
Salariya et al., 1978	U.K.	A				/
Sanghvi, 1995	Brazil	B	/			
Saunders & Carroll, 1988	U.S.A.	C				/
Sciacca et al., 1995	U.S.A.	B			/	
Stone-Jiménez & de Maza, 1993	Guatemala	C			/	/
Strachan-Lindenberg et al., 1990	Nicaragua	B			/	
Tamagond & Saroja, 1992	India	B		/		
Valdés et al., 1994	Chile	C		/		
Valdés et al., 1993; Perez & Valdés, 1991; Pugin et al., 1996	Chile	B			/	
Valdés et al., 1993	Chile	B	/			
Valdés, 1996	Chile	B			/	
Vandale-Toney et al., 1992	Mexico	B	/		/	/
Waldenström & Nilsson, 1994	Sweden	A			/	
Wellstart International, 1998	India	C			/	
Wiles, 1984	U.S.A.	B			/	

Section I

Early Initiation

Behavior 1. Early Initiation

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Comm-unity Educ.**	**Post-partum Clinics**	**Page #**
Langer et al., 1996	Mexico	A				/						15
Sanghvi, 1995	Brazil	B		/								16
Valdés et al., 1993	Chile	B	/	/	/							17
Prasad & Costello, 1995	India	B			/							18
Gerung, 1989	Indonesia	B		/	/							19
Vandale-Toney et al., 1992	Mexico	B		/	/							20
Righard & Alade, 1990	Sweden	B		/								21
Kistin et al., 1994	USA	B				/						22
Holley-Newsome, 1995	Armenia	C					/					23
Popkin et al., 1991	Honduras	C		/	/							24
Lal et al., 1992	India	C						/				26
McDivitt et al., 1993	Jordan	C					/					27
Bradley & Meme, 1992	Kenya	C		/	/							28

Reference	Country	Study Design	Pre-natal Educ.	Hospital Policies/ Actions	Health Worker Training	Peer Coun-seling	Mass Media	Women's Groups	Home Visits	Comm-unity Educ.	Post-partum Clinics	Page #
Huffman, 1991	Panama	C		/	/							29

Behavior(s): Early Initiation, Exclusive Breastfeeding	
Country: Mexico	**Study site:** Dr. Luis Castelazo Ayala IMSS Gyneco-Obstetrics Hospital
Author(s): Langer, Ana et al.	**Pub. Date:** 1996
Citation: Intrapartum Social Support and Exclusive Breastfeeding in Mexico. Washington, D.C.: Wellstart International, Expanded Promotion of Breastfeeding Program, September 1996.	
Study design: Study used randomized clinical trial with 363 women in control group and 361 in intervention group.	
Implementing agency: National Institute of Public Health & MOH	**Project name:**
Intervention: Intervention consisted of providing first-time mothers with psychosocial support from another woman (a “doula”) during labor and delivery. The doula visited the mother in the maternity ward and discussed breastfeeding techniques. One month postpartum, community educators evaluated breastfeeding practices during home visits.	
Results/impact: Only 11% of the intervention group and 8% of the control group breastfed in the first 8 hours after birth. The intervention did not alter hospital norms that delay breastfeeding. However, at one month postpartum, 12% of the intervention group compared with 7% of the control group were exclusively breastfeeding. Exclusive breastfeeding was relatively low because of the incidence of full breastfeeding (giving breastmilk with teas and/or water); at one month postpartum, 37% of the intervention group and 36% of the control group were providing full breastfeeding.	
Comments: An ethnographic study and cost-effectiveness study were also done.	
Programmatic implications: Having social support during delivery had no impact on early initiation but was associated with an increase in exclusive breastfeeding at one month postpartum.	

Behavior(s): Early Initiation	
Country: Brazil	**Study site:** 2 hospitals
Author(s): Sanghvi, Tina G.	**Pub. Date:** 1995
Citation: Improving the Cost-Effectiveness of Breastfeeding Promotion in Maternity Services: Summary of the USAID/LAC HNS Study in Latin America (1992-1995). San Diego, CA: Wellstart International, 1995.	
Study design: Mothers delivering at 2 hospitals were interviewed regarding the assistance and information they received. The hospital that was actively engaged in implementing breastfeeding promotion policies and procedures was considered the intervention hospital (N=168). Another hospital that was less active in implementing such policies and procedures was used as the comparison or control group (N=152).	
Implementing agency: University Research Corporation and International Science and Technology Institute	
Intervention: The hospital of the intervention group made a concerted effort to implement breastfeeding promotion policies: 93% of the mothers reported no separations during their hospital stay; 87% heard a talk about breastfeeding; 87% held their newborn infant in the delivery room; and 72% had help with breastfeeding the first time. In comparison, 69% of the mothers at the hospital of the control group reported that they were not separated from their infant during their hospital stay; 18% heard a talk about breastfeeding; 59% held their newborn infant in the delivery room; and 34% had help with breastfeeding the first time. Similarly, mothers in the intervention group received more information during pre- and postnatal visits: 37% of the intervention group and 26% of the control group received breastfeeding information during prenatal visits; 97% of the intervention group and 70% of the control group received breastfeeding information and counseling during the 1st month postpartum.	
Results/impact: 46% of the mothers in the intervention group breastfed their infant within ½ hour of birth, compared with 3 percent of those in the control group. Mothers in the intervention group breastfed exclusively for 75 days, compared with 22 days among those in the control group.	
Comments: Both hospitals practiced 100% rooming-in and did not permit gifts or samples of infant formula to be given. Mothers in the intervention group were more knowledgeable than those in the control group about lactation management, such as how to increase their breastmilk supply and when to introduce liquids, but a high proportion of mothers in both groups said they did not know how to resolve frequently encountered breastfeeding problems.	
Programmatic implications: Rigorous implementation of baby-friendly hospital policies and nearly universal counseling during the 1st month postpartum were beneficial to early initiation and exclusive breastfeeding.	

Behavior(s): Early Initiation, Exclusive Breastfeeding	
Country: Chile	**Study site:** Santiago, urban middle-class community
Author(s): (1) Valdés, Verónica et al.; (2) Pérez, Alfredo, and Verónica Valdés; (3) Pugin, Edda et al.	**Pub. Date:** (1) 1993; (2) 1991; (3) 1996
Citation: (1) The Impact of a Hospital and Clinic-based Breastfeeding Promotion Programme in a Middle Class Urban Environment. Journal of Tropical Pediatrics. 39 (June 1993):142-151; (2) Santiago Breastfeeding Promotion Program: Preliminary Results of an Intervention Study. American Journal of Obstetrics and Gynecology. 165:6/2 (December 1991):2039-2044; (3) Does Prenatal Breastfeeding Skills Group Education Increase the Effectiveness of a Comprehensive Breastfeeding Promotion Program? Journal of Human Lactation. 12:1 (1996):15-19.	
Study design: Subjects were interviewed during their first visit to the outpatient clinic at 10-15 days postpartum and at 30, 60, 90, 120, 150, and 180 days and at 12 and 18 months.	
Implementing agency: Catholic University	**Project name:** Breastfeeding Promotion Program (BFPP)
Intervention: Among mothers who gave birth at the Clinical Hospital of the Catholic University, 313 mother-child pairs were recruited to serve as controls. The BFPP was then initiated and 422 mother-child pairs were recruited. Five interventions were implemented: training of health providers in breastfeeding; activities at the prenatal clinic; activities at the hospital; changes in hospital policies to allow early breastfeeding and contact with the newborn and provide individual education; and opening of an outpatient breastfeeding support clinic. Intervention mothers attended the lactation clinic at 7-10 days postpartum; the control group received routine postnatal care. A sixth intervention was given to 59 of the 422 mother-child pairs. Mothers in this group received prenatal breastfeeding skills group education in 1-3 20-minute sessions offered in conjunction with prenatal checkups.	
Results/impact: The average time from birth until breastfeeding initiation was 6.7 hours in the control group and 2.8 hours in the intervention group ($p<0.0001$). At 6 months, 32% of the infants in the control group and 67% of those in the intervention group were being exclusively breastfed ($p<0.0001$). Mothers in the intervention group breastfed with higher frequency and for longer periods than those in the control group. Among the 59 women who received the prenatal breastfeeding skills group education, 80% were fully breastfeeding at 6 months postpartum, compared with 65% among mothers who received the five other interventions ($p<0.01$).	
Comments: A subgroup of 94 mothers was visited by a nurse-midwife 2-4 days after hospital discharge; results of this intervention were not reported. Some infants in the intervention group did receive solids, ranging from 1% at 4 months to 13% at 6 months.	
Programmatic implications: This set of interventions was beneficial. The addition of prenatal group education provided additional benefits.	

Behavior(s): Early Initiation, Feeding Colostrum	
Country: India	**Study site:** Hajipur, Bihar, a town of 100,000 people
Author(s): Prasad, Bindeshwar, and Anthony M de L Costello	**Pub. Date:** 1995
Citation: Impact and Sustainability of a “Baby Friendly” Health Education Intervention at a District Hospital in Bihar, India. British Medical Journal. 310 (11 March 1995):621-623.	
Study design: During 7/92-2/93, a study was conducted at Sadar Hospital, a government-funded district hospital. Mothers delivering at the hospital were enrolled sequentially in three groups: (1) the control group (N=172); (2) the “early follow-up” group (N=195), who received health education within 20 working days after the training; and (3) the “late follow-up” group (N=101), who received health education six months after the training. All mothers were interviewed at home within 2 weeks post-partum. The early follow-up group were also interviewed prior to hospital discharge.	
Implementing agency: Sadar Hospital	**Project name:**
Intervention: The health education intervention consisted of having health workers provide mothers with information and assistance in breastfeeding. It was designed by a health education physician who spent 10 days training key staff in the maternity ward regarding the importance of early initiation and avoidance of prelacteal feeds and benefits of colostrum.	
Results/impact: All mothers in the early follow-up group received the health education. However, 6 months after the training only 36% of those in the late follow-up group were educated by health workers probably due to factors such as staff turnover and dilution of training. Among the early follow-up group, 60% initiated breastfeeding within 1 hour of delivery, compared with 3% of the control group. While 96% of the control group used prelacteal feeds, 43% of the early follow-up group did so ($p<0.001$). In the late follow-up group, 97% of the mothers who did not receive health education used prelacteal feeds, compared with 42% of those who did.	
Comments: Data on the duration of exclusive breastfeeding were not collected.	
Programmatic implications: The author concludes that refresher training should be offered after 6 months and practices should be monitored regularly.	

Behavior(s): Early Initiation, Feeding Colostrum	
Country: Indonesia	**Study site:** Minahasa, a rural subdistrict of 1.1 million people
Author(s): Gerung, Albert A.	**Pub. Date:** 1989
Citation: Breastfeeding Promotion for Child Survival. In E. Kessel and A.K. Awan (eds.). Maternal and Child Care in Developing Countries. Thun, Switzerland: Ott Publishers, 1989.	
Study design: Data on breastfeeding were collected for all newborns during 1985-mid-1987. Subjects included 477 babies born prior to the intervention, 245 born after the intervention was implemented in the last nine months of 1986, and 194 born during the first 6 months of 1987.	
Implementing agency: Bethesda Hospital	**Project name:** Breastfeeding Promotion Program
Intervention: The Bethesda Hospital began rooming-in in 1982 but continued to separate newborns from their mother for 3-5 hours after birth and to provide glucose in water or formula during this time. In April 1986 the hospital changed its procedures: nursing and primary health care staff were trained in lactation management, newborns were immediately put to the mother's breast and no prelacteal feedings were permitted.	
Results/impact: The proportion of newborns who were exclusively breastfed was 33% in 1985 and 61% in Jan.-Mar. 1986. After the intervention, it rose to 94% in Apr.-Dec. 1986 and 87% in Jan.-June 1987.	
Programmatic implications: Changing hospital policies and training health workers were beneficial.	

Behavior(s): Early Initiation, Exclusive Breastfeeding, Continued Breastfeeding	
Country: Mexico	**Study site:** Mexico City
Author(s): Vandale-Toney, Susan et al.	**Pub. Date:** 1992
Citation: Vandale-Toney, Susan et al. Programa de Promoción de la Lactancia Materna en el Hospital General de México: Un Estudio Evaluativo. Salud Pública de México. 34:1 (January-February, 1992):25-35.	
Study design: Prior to the intervention, in October-November 1988, 175 first-time mothers were interviewed to learn about their breastfeeding plans and expectations; these women served as the control group. They were also interviewed at home at one month postpartum (N=95) and at four months postpartum (N=85). The intervention group consisted of 176 first-time mothers who delivered at the hospital during April-June 1989. These women were interviewed at the hospital after delivery, at home at one month postpartum (N=94) and at four months postpartum (N=75). Exclusive breastfeeding was defined as breastmilk with small quantities of water and tea, "a common practice among the large majority of Mexican women." (p. 32)	
Implementing agency: La Leche League of Mexico and the Mexico City General Hospital, Secretary of Health	**Project name:** Breastfeeding Promotion Program
Intervention: In 1988-89 the Mexico City General Hospital conducted a breastfeeding promotion program with three components: (1) in-service training in lactation management for 110 pediatrics and obstetrics staff members, including physicians, nurses and social workers; (2) changes to improve breastfeeding initiation; and (3) classes for first-time mothers on breastfeeding advantages and techniques. Following training sessions, the hospital changed several policies regarding postnatal care: bottle feeding required a physician's order; mothers received individual guidance in lactation management; and breastfeeding information replaced materials previously provided by commercial sources.	
Results/impact: The average time between delivery and the first nursing was reduced from 1.6 hours to 1.3 hours. At one month postpartum, 38 percent of the mothers in the intervention group were exclusively breastfeeding, compared with 34.4 percent of those in the control group. However, by the fourth month postpartum, none of the mothers in the intervention group and 2.4 percent of those in the control group were exclusively breastfeeding. First-time mothers in the intervention group breastfed their infants for a median duration of 17 weeks, compared with 12 weeks among those in the control group. The difference in the proportion of infants still being nursed at 16 weeks was statistically significant.	
Comments: None of the findings pertaining to initiation and exclusive breastfeeding was statistically significant. Nevertheless, the intervention did affect duration of breastfeeding. Also, infants in the intervention group were healthier ($p<0.05$) and had more weight gain between 1.4 and 4.5 months ($p<0.001$) than those in the control group.	
Programmatic implications: Changes in hospital practices had some benefits for infant health.	

Behavior(s): Early Initiation		
Country: Sweden	**Study site:** Lund & MalmÇ	
Author(s): Righard, Lennart, and Margaret O. Alade		**Pub. Date:** 1990
Citation: Effect of Delivery Room Routines on Success of First Breast-feed. Lancet. 336 (1990):1105-1107.		
Study design: Researchers observed 72 deliveries and assessed each infant's sucking technique in the 1st 2 hours after birth. Correct sucking was defined as mouth open wide, tongue under the areola, and deep sucks.		
Implementing agency: University of Lund & MalmÇ General Hospital	**Project name:**	
Intervention: In a study of delivery room routines, researchers observed 72 deliveries. Based on a decision by the midwife and mother, newborns in the "contact" group (N=38) stayed with their mother for at least 1 hour or until the 1st breastfeed had been accomplished. Newborns in the "separation" group (N=34) rested on their mother's abdomen for 15-20 minutes after birth, were removed from the room for about 20 minutes for weighing and bathing, and then were returned to their mothers.		
Results/impact: Of the infants in the contact group, 63% showed the correct sucking technique, compared with 21% of those in the separation group ($p<0.01$). Forty of the mothers had received pethidine during labor; their infants were also sedated, and 18% sucked incorrectly and 63% did not suck at all ($p<0.001$).		
Programmatic implications: Keeping newborns with their mother for at least 1 hour or until the 1st breastfeed was beneficial.		

Behavior(s): Early Initiation, Exclusive Breastfeeding		
Country: U.S.A.	**Study site:** Chicago, IL Low-income, minority women	
Author(s): Kistin, Naomi; Rache Abramson; and Peg Dublin.		**Pub. Date:** 1994
Citation: Effect of Peer Counselors on Breastfeeding Initiation, Exclusivity, and Duration among Low-income Urban Women. Journal of Human Lactation. 10:1 (1994):11-15.		
Study design: The study compared breastfeeding practices between 59 women who received support from counselors with 43 women who had requested a counselor but did not receive one due to inadequate numbers of trained counselors.		
Implementing agency: Chicago Breastfeeding Task Force	**Project name:**	
Intervention: In 1987 a breastfeeding peer counselor program was established at Cook County Hospital, Chicago's only public hospital, which had 5,500 deliveries in 1989. Volunteer peer counselors were trained in 8 2-hour sessions on breastfeeding management and counseling techniques. Counselors were instructed to talk with clients before delivery, at least twice weekly until breastfeeding was established, every 1-2 weeks for the next 2 months, and then as needed. All subjects planned to breastfeed their infants and had requested a peer counselor.		
Results/impact: At hospital discharge, 93% of the women in the counseling group and 70% of those in the control group had initiated breastfeeding ($p<0.05$); 77% and 40% of these groups, respectively, were exclusively breastfeeding ($p<0.05$). After more than 12 weeks postpartum, 29% of the group with counselors were exclusively breastfeeding, compared with 7% of those with no counselors ($p<0.05$).		
Programmatic implications: Suggested future areas of research are: use of peer counselors in changing women's minds about feeding formula, incremental effects of numbers of contacts, content of interactions, and paid vs. volunteer peer counselors. After training, some peer counselors obtained jobs as health advocates.		

Behavior(s): Early Initiation	
Country: Armenia	**Study site:** Six polyclinics in the city of Yerevan
Author(s): Holley-Newsome, Martha	**Pub. Date:** 1995
Citation: Holley-Newsome, Martha. Armenia Communications Campaign Monitoring Report. Washington, D.C.: Wellstart International, February 17, 1995.	
Study design: A 1993 Breastfeeding Study with a sample of 479 mothers served as the baseline. The intervention sample consisted of 37 women whose infants had been born since the start of the campaign and thus were between 6 weeks and 2 months old. These women were associated with 6 polyclinics in Yerevan.	
Implementing agency: Ministry of Health	**Project name:**
Intervention: From September 20 to October 30, 1994, the MOH conducted a national media campaign to promote optimal breastfeeding. Campaign components were: a press conference; a 2-minute TV spot aired 112 times; 2 radio spots aired 168 times; 67 newspaper ads; and 60,000 brochures distributed to mothers through urban and rural hospitals and polyclinics.	
Results/impact: Exposure to the campaign was high: 95 percent reported seeing information on TV, 81 percent read about it in a newspaper, 68 percent discussed breastfeeding with a health worker, 65 percent heard information on the radio, and 60 percent saw a brochure. A comparison of the findings of the 1993 study with those of the intervention group indicates that the timing of breastfeeding initiation decreased. In 1993, 12 percent of the mothers initiated breastfeeding within 0-6 hours after delivery, compared with 73 percent of the women interviewed after the 1994 campaign. On-demand feeding increased from 17 percent of the women in 1993 to 94 percent after the 1994 campaign. In 1993, 84 percent of the women reported bottle feeding in the previous 24 hours, compared with 32 percent after the 1994 campaign. About 70 percent of the women interviewed in 1994 said that they had changed their behavior as a result of the campaign, mostly changing to on-demand and more frequent breastfeeding. Women who had seen a brochure breastfed exclusively for 10 weeks, compared with 9 weeks among those who had seen a newspaper ad, and 6 weeks among those exposed to radio and TV.	
Comments: Results are not generalizable due to the small sample size. The sample size was limited because of the short time between project approval and close-down of activities for the winter. The sampling method for the baseline survey is unclear; the post-intervention survey had a convenience sample. More than a year elapsed between the baseline and the intervention.	
Programmatic implications: This study suggests that a short-term intensive campaign can influence breastfeeding behaviors, although confounding variables were not controlled and thus the observed effects are not clearly attributable to the intervention.	

Behavior(s): Early Initiation, Exclusive Breastfeeding, Continued Breastfeeding	
Country: Honduras	**Study site:** Phase 1: Tegucigalpa & San Pedro Sula; Phase 2: national
Author(s): (1) Popkin, Barry M. et al.; (2) Not stated; (3) Huffman, Sandra L. et al.	**Pub. Date:** 1991, 1987, 1991
Citation: (1) An Evaluation of a National Breast-Feeding Promotion Programme in Honduras. Journal of Biosocial Science. 23 (1991):5-21; (2) "Breastfeeding Promotion in Honduras: The PROALMA Project." Mothers and Children. 6:1 (1987):1-4; (3) Breastfeeding Promotion in Central America: High Impact at Low Cost. Washington, D.C.: Academy for Educational Development, Nutrition Communication Project, 1991.	
Study design: In the 1st phase of the project, PROALMA conducted three baseline surveys in 1982 in 19 low-income communities in Tegucigalpa; these surveys consisted of 868 women community residents, 344 health professionals and 449 postpartum women. In 1985 follow-up surveys were conducted in the same communities of 521 women residents, 166 health professionals and 166 postpartum women. In the 2nd phase of the project, 251 postpartum mothers delivering at 13 regional and area hospitals were interviewed in 1986. A follow-up survey in 1988 interviewed 30 mothers in each of the same 13 hospitals plus 2 other area hospitals and 3 hospitals covered in PROALMA I. In 1986 (N=901) and 1988 (N=1,020), the project interviewed mothers of infants under 1 in 5 cities. In 1988 four nurses made site visits to 18 hospitals to evaluate hospital practices.	
Implementing agency: Ministry of Public Health, National Social Security Institute, & National Social Welfare Agency	**Project name:** PROALMA project
Intervention: The PROCOMSI project, which promoted breastfeeding in two urban areas served by two hospitals and a health center, broadcast radio spots on breastfeeding during Mar.-June 1981 and supported more intensive radio broadcasts during 11/82-3/83, with a radio course, spots, and song on breastfeeding; PROCOMSI also held 2 seminars for medical personnel. These activities paved the way for PROALMA's work. The 1st phase of the PROALMA project (7/83-12/85) sought to change infant feeding norms in three major urban hospitals and a health center. Project staff trained health professionals in breastfeeding techniques; 80% of those surveyed reported receiving some formal training from PROALMA. Prior to the project, mothers were separated from their infants for 3-6 hours during the day and all night. Changes in hospital practices included elimination of routine distribution of formula, postpartum initiation of breastfeeding, and rooming-in. PROALMA staff made daily visits to counsel new mothers in hospital. They also made more than 100 home visits to treat specific breastfeeding problems. Six public health clinics in Tegucigalpa provided lactation management services. PROALMA I cost $365,000 for the 2 ½ year project. During this period the project saved an estimated $199,000 in reduced purchases of infant formula, bottles and drugs. The 2nd phase of the PROALMA project (1/86- early 1989) expanded breastfeeding promotion activities to cover an additional 14 regional and area hospitals. Training workshops were held for 3,800 health professionals and 5,900 community leaders. In the 1986 survey of health professionals, 62% said they had received training in breastfeeding. Three pamphlets, a poster and a calendar were produced and distributed to mothers and health workers. More than 14,000 educational talks attended by 125,000 community members were conducted. The 3-year PROALMA II project cost $817,000.	

Results/impact: Between 1982 and 1985, the proportion of urban health professionals recommending that women initiate breastfeeding at birth increased from 27% to 87% ($p<0.01$). In 1982 none of the women initiated breastfeeding during the 1st hour after birth; in 1985 more than 50% of the mothers did in 2 of the 3 hospitals. The Maternal and Child Hospital in Tegucigalpa saved an estimated $14,500 annually due to decreased use of formula, bottles and drugs. Duration of exclusive breastfeeding increased: in 1982, 65% of breastfeeding women in low-income areas of Tegucigalpa introduced some form of supplementation during the first month; in 1985 only 40% did so. National surveys (DHS) found that median duration of breastfeeding among urban women increased from about 4 months in 1981 to 9 months in 1984 and 10 months in 1987. The surveys done in 19 low-income communities of Tegucigalpa found that the proportion of infants breastfed at 6 months increased from 45% in 1982 to 72% in 1985.

Comments: Report did not state the length of hospital stay or extent of rooming-in.

Programmatic implications: The project reached a large proportion of health professionals, which helped to institutionalize the new practices. Fewer changes in breastfeeding behaviors were observed between 1984 and 1987. After the 6-year project, only about half of the 18 hospitals studied had adopted the 10 hospital routines supportive of breastfeeding. This finding suggests that institutionalization of new norms requires additional effort.

Behavior(s): Early Initiation	
Country: India	**Study site:** 10 villages of community development block Beri (Rohtak), Haryana
Author(s): Lal, Sunder et al.	**Pub. Date:** 1992
Citation: Participatory Health Communication and Action Through Women Groups in Rural Areas. Indian Journal of Pediatrics. 59 (1992):255-260.	
Study design: In 1988 a baseline survey of 300 mothers and focus group discussions were conducted in the 10 villages. Women's groups were organized. In 1990 a repeat survey of 300 mothers was done.	
Implementing agency: Department of Social and Preventive Medicine, Medical College, Rohtak, India	**Project name:**
Intervention: Twelve women's groups were identified with the help of local workers. Each group was given a one-week orientation training on maternal and child health problems. Weekly meetings were organized for the women's groups; local birth attendants, community development workers, health workers, and medical interns also attended. Groups were educated and mobilized through face-to-face contact, demonstration, exhibition, organized radio listening, sharing information, and visits to other villages. Each woman in the group agreed to contact 10-20 households in her neighborhood for health education and specific actions for as chlorination of water, garbage disposal, hand-washing and immunization.	
Results/impact: The proportion of mothers who begin breastfeeding immediately after birth or on the same day they give birth rose from 23% in 1988 to 60% in 1990 ($p<0.05$).	
Comments: According to the authors, organizing the women's groups was an "arduous task" (p. 258) that took about one year to accomplish. On the day of the meeting women had to be reminded to get together. Health workers and community development workers would not have been able to organize the groups. Women continue to work for improved health practices in their communities. Group members were volunteers; nongovernmental organizations have used part-time paid staff in their community development projects.	
Programmatic implications: Women's groups were mobilized to make improvements in a wide range of health practices, including early initiation of breastfeeding.	

Behavior(s): Early Initiation	
Country: Jordan	**Study site:** national
Author(s): McDivitt, Judith A. et al.	**Pub. Date:** 1993
Citation: The Impact of the Healthcom Mass Media Campaign on the Timely Initiation of Breastfeeding in Jordan. Studies in Family Planning. 24 (1993):295-309.	
Study design: The project conducted two national household surveys of mothers of children aged 2 and under: a baseline in Aug.-Sept. 1988 (N=930) and a post-campaign survey in July-Aug. 1990 (N=966). A subset of mothers of children 20 months or younger was selected to determine changes since the Oct. 1988 seminar.	
Implementing agency: Noor al Hussein Foundation	**Project name:** Healthcom Mass Media Campaign
Intervention: In Oct 1988 the project held a seminar on breastfeeding policy, promotion and practices for 130 health professionals and other decision-makers. It conducted two mass media campaigns in May-July 1989 and Mar.-Apr. 1990 with daily radio & TV spots. The most frequent message was "initiate breastfeeding within the first hours after birth." Other topics were the importance and benefits of colostrum, breastmilk as the only food needed for 1st four months of life, and advice on managing common breastfeeding problems.	
Results/impact: Knowledge of colostrum and early initiation rose from 40% in 1988 to 72% in 1990 ($p<0.05$). The proportion of mothers initiating breastfeeding within 6 hours after birth increased from 40% in 1988 to 54% in 1990 ($p<0.05$). The campaign had a positive impact on home and public hospital deliveries, but not for those in private hospitals. Private hospitals were more likely than public hospitals to separate infants from mothers within the 1st 6 hours after birth, to have used anesthesia, to keep infants in the nursery, and to give infants liquids other than breastmilk. Timely initiation was influenced by routine practices such as rooming-in and supplementary feeding.	
Comments: The study did not measure exclusive breastfeeding.	
Programmatic implications: The mass media campaign did improve mothers' knowledge and practices regarding early initiation. However, it appears that women delivering in private hospitals were unable to circumvent hospital policies preventing early initiation. Other activities — the seminar for health professionals and MOH initiatives to change hospital policies and practices and develop training curricula for hospital administrators and nursing students — were also beneficial.	

Behavior(s): Early Initiation, Feeding Colostrum, Continued Breastfeeding	
Country: Kenya	**Study site:** 58 hospitals nationwide
Author(s): Bradley, Janet E., and Joyce Meme	**Pub. Date:** 1992
Citation: Breastfeeding Promotion in Kenya: Changes in Health Worker Knowledge, Attitudes and Practices, 1982-89. Journal of Tropical Pediatrics. 38 (October 1992):228-233.	
Study design: The 1982 KAP survey of 195 health workers was used as a baseline. In 1989 the MOH interviewed 109 hospital policy-makers and senior staff and 175 maternity ward staff in 58 hospitals nationwide. These hospitals consisted of 41 government facilities and 17 private or religious facilities. The researchers report that the 1982 and 1989 surveys used similar samples, which were based on purposive selection of facilities and purposive and random sampling of subjects.	
Implementing agency: Ministry of Health	**Project name:**
Intervention: Following a 1982 KAP survey of health workers, the MOH implemented a breastfeeding promotion program: it adopted a Code of Marketing of Breastmilk Substitutes; it issued directives to all hospitals to stop distributing infant formula and giving routine prelacteal feedings and begin promoting early breastfeeding, full rooming-in; it appointed a national breastfeeding officer to organize training of more than 800 health workers in breastfeeding promotion and lactation management.	
Results/impact: Hospital policy-makers and maternity ward staff were more knowledgeable about breastfeeding in 1989 than in 1982. Practices improved dramatically. The proportion of health workers reporting that babies were put on the breast within one hour of birth increased from 14% in 1982 to 61% in 1989. The practice of giving prelacteal feeds declined from 93% of the health workers in 1982 to 48% in 1989. Routine use of infant formula declined from 54% in 1982 to 3% in 1989. The proportion of health workers advocating introduction of semi-solid food after 6 months increased from 13% in 1982 to 31% in 1989. Average duration of breastfeeding has increased from a mean of less than 14 months in 1979 to 19.4 months in 1989.	
Comments: The direct impact of the policy changes and training on breastfeeding practices is difficult to assess.	
Programmatic implications: Health workers who received training often did not improve practices in maternity wards. Training of policy-makers may not be productive, since “they do not generally see themselves in charge of maternity ward policy.” The non-availability of infant formula had an influence on changing hospital practices. Government directives were not widely read by health workers. If read, they were not understood.	

Behavior(s): Early Initiation, Exclusive Breastfeeding	
Country: Panama	**Study site:** Coclé region, which has 141,000 residents and is 75% rural
Author(s): Huffman, Sandra L.	**Pub. Date:** 1991
Citation: A Historical Review of the Panama Breastfeeding Promotion Project. Washington, D.C.: Academy for Educational Development, 1991.	
Study design: A random sample of clinic records of one-third of all infants aged 2-4 months who attended a well-child clinic at Penonome Hospital, a regional hospital with less than 1,000 births annually (sample size not reported).	
Implementing agency: Coclé Regional Commission	**Project name:** Panama Breastfeeding Promotion Project
Intervention: Between 1984 and 1986, the Coclé MOH regional office trained more than 2,000 health workers in breastfeeding; more than 5,000 people attended training seminars. Before the project, the Penonome Hospital gave newborns nothing after delivery for 4 hours and then gave dextrose water and formula until discharge 24 hours after delivery. In 1984, it stopped giving water and formula, changed to rooming-in for vaginal deliveries, and reduced mother-infant separation to ½ hour (daytime) to 3 hours (nighttime).	
Results/impact: The proportion of infants aged 2-4 months being exclusively breastfed increased from 30% in 1984 to 57% in 1986. The number of 2-oz. bottles prepared for newborns at Penonome Hospital fell from 5,855 in 1984 to 1,750 in 1986. Thus the hospital saved $800-1,250 per year.	

Section II

Feeding Colostrum

Behavior 2. Feeding of Colostrum

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Comm-unity Educ.**	**Post-partum Clinics**	**Page #**
MkNelly, 1997	Ghana	A						/				35
Griffiths, 1991; Zeitlin et al., 1989	Indonesia	A				/	/					36
Gottert, 1995; Ross, 1997	Mali	A					/			/		37
Prasad & Costello, 1995	India	B			/							38
Tamagond & Saroja, 1992	India	B	/									39
Gerung, 1989	Indonesia	B		/	/							40
Valdés et al., 1994	Chile	C			/							41
Bradley & Meme, 1992	Kenya	C		/	/							42
Clavano, 1982	Philippines	C		/								43

Behavior(s): Feeding Colostrum	
Country: Ghana	**Study site:** Coastal area served by Lower Pra Rural Bank
Author(s): MkNelly, Barbara	**Pub. Date:** 1997
Citation: Freedom from Hunger's *Credit with Education* Strategy for Improving Nutrition Security: Impact Evaluation Results from Ghana. Paper presented at the XII International Conference of Agricultural Economists, Sacramento, CA, August 11-14, 1997.	
Study design: A 1993 baseline survey covered 370 mothers of one-year-old children randomly selected from community lists. The 1996 follow-up survey studied mother/child pairs from each of 3 groups: women who had participated in the program for at least 1 year (N=55); non-participating women living in program communities (N=112); and women living in communities without the program (controls, N=102). Thirteen out of 19 study communities were randomly assigned to a program or control group.	
Implementing agency: Freedom from Hunger	**Project name:** Credit with Education
Intervention: The project provides rural women with small-scale loans (<$300) and education in the basics of health, nutrition, birth timing and spacing, and small business skills. Participants form self-managed credit associations, which meet weekly to handle finances and hold educational sessions. Through skits and group discussions, field agents stress 4 behaviors: giving colostrum to newborns, not giving water until a newborn is at least 120 days old, not giving watery foods until at least 120 days, and never using a feeding bottle. Key messages are: the "benefits of colostrum for keeping newborns healthy" and "breastmilk alone is the safest and best food for babies and provides all the necessary nutrition and hydration a baby requires from birth through about 6 months."	
Results/impact: Between 1993 and 1996, the proportion of program participants who gave their newborns colostrum increased from 60% to 96%, compared with an increase of 61% to 71% among mothers in the control group ($p<0.001$). During this same period, the mean age at which mothers introduced water to babies increased from 7 days to 125 days among participating mothers, compared with an increase of 6 days to 51 days among those in the control group ($p<0.001$). Similarly, the mean age at which watery foods were introduced increased from 2.2 months to 5 months among participating mothers and from 2.3 months to 3.5 months among those in the control group ($p<0.01$).	
Comments: Loan recovery rates are high (99%). Interest and fees are used to pay the administrative costs of program delivery. In most areas operating costs are fully recovered within 3-5 years of start-up. During 10/96-3/97 the interest paid by borrowers covered 81% of the bank's costs of delivering the credit and education, covering financial costs such as interest on debt but not loan loss reserve.	
Programmatic implications: Group education and discussion were beneficial to participants, but not to non-participants living in the same communities.	

Behavior(s): Feeding Colostrum	
Country: Indonesia	**Study site:** 2 rural and 2 semi-urban subdistricts of East Java and West Nusa Tenggara (NTB)
Author(s): Griffiths, Marcia; Zeitlin, Jennifer et al.	**Pub. Date:** 1991; 1989
Citation: The Weaning Project: Improving Young Child Feeding Practices in Indonesia: Project Overview. Washington, D.C.: Manoff Group Inc., March 1991; Evaluation of the Indonesian Weaning Project by Yayasan Indonesia Sejahtera. Washington, D.C.: Manoff Group Inc., September 1989.	
Study design: After an initial assessment during 11/85-10/86 using various qualitative techniques, the project conducted a baseline survey in 7-8/87 (N=800) and a follow-up survey in 2/89. Mothers with children under 24 months were the subjects. The 1989 survey covered 780 mothers with children under 24 months (387 in comparison/control villages and 390 in intervention areas) and 240 village volunteers. A subsample of 143 infants under 9 months of age at the time of the baseline were revisited during the post-intervention survey. Villages and households were randomly selected.	
Implementing agency: MOH	**Project name:** The Weaning Project
Intervention: From 11/85 to 9/89, the MOH conducted a pilot project to promote improved feeding among children under age 2. In the first year the project did an assessment of weaning practices and conducted household trials of recipes for weaning foods. During 3/88-12/89, the project trained 1,000 village volunteers as well as midwives, community leaders, and shopkeepers. To educate mothers about correct feeding practices, the project relied on interaction with village volunteers at health posts, radio, posters, leaflets, counseling cards and a child feeding schedule. Messages covered timing of food introduction and feeding frequency: give only breast milk until the child is 4 months old, introduce mashed foods in months 4-5, give weaning food 3 times daily in months 6-9, and feed family foods at 10-24 months. The project promoted a recipe for a weaning food and recommended one spoonful for every month of age at every meal. The campaign lasted 22 months (from 3/88 to 12/89).	
Results/impact: The 1989 evaluation found that the project did improve mothers' and village volunteers' knowledge of child feeding practices and did have an impact on mothers' child feeding practices, children's calorie intake, and children's nutritional status. More than 50% of mothers recalled at least one project material. Mothers who had been exposed to the project were more likely to introduce foods later, prepare a special weaning food, and give the recommended weaning food. Half (50%) of the mothers in the intervention group gave their infants colostrum, compared with 38% in the comparison group. Of those mothers who remembered a program material, 63% fed colostrum ($p<0.05$). No significant differences in the initiation of breastfeeding were found. Despite the strong tradition of introducing food in the first week of life, nearly 17% of women in the intervention group waited until month 4 or 5 to introduce foods, compared with 8% in the comparison group.	
Comments: The program had a stronger impact on knowledge than behavior. Given the complex and numerous messages, the 22-month campaign was probably not long enough to change deep-seated traditional practices.	

Behavior(s): Feeding Colostrum, Exclusive Breastfeeding	
Country: Mali	**Study site:** 4 regions with a population of 761,000
Author(s): (1) Gottert, Peter; (2) Ross, Jay	**Pub. Date:** 1995, 1997
Citation: (1) Final Report: Mali Nutrition Communication Project, 1989-1995. Washington, D.C.: Academy for Educational Development, May 1995; (2) Cost-effectiveness of the Nutrition Communication Project in Mali. Washington, D.C.: Academy for Educational Development, Support for Analysis & Research in Africa (SARA) project, July 1997.	
Study design: During 1989-90 the project conducted ethnographic research, 16 focus groups and 2 market surveys. A baseline KAP survey was conducted in 1990 in 47 villages; 835 women and 524 men were interviewed and data on 657 children's nutritional status were collected. Project interventions were done in 24 villages matched with 24 control villages. A mid-term survey in 1993 covered 272 women, 81 men and 211 children 4 project villages and 4 control villages. An impact evaluation survey was done in 12/94-1/95 covering 712 women, 354 men, and 845 children under 3 in 24 project villages and 24 control villages.	
Implementing agency: MOH, international PVOs, local NGOS	**Project name:** Nutrition Communication Project
Intervention: This six-year project (1989-1995) aimed to improve the nutritional status of rural women and children under 3. It covered 90,026 children under age 3 in four regions. The project promoted specific child feeding behaviors: at least 3 supervised meals per day, use of a separate feeding bowl for children 12-36 months old, and recuperative feeding skills. It also promoted vitamin A-rich foods, recognition of men's responsibilities, better food choices, and exclusive breastfeeding through 4 months. The project used interpersonal and group counseling from field workers to reach women and village mobilization meetings, role plays and radio to reach men. Supporting materials were a village story book, facilitator's guide, health cards, a manual for field workers, a 10-part radio drama, 10 radio spots, a teachers' activity guide, and 3 literacy booklets. A series of 6 regional skill-building workshops for 360 PVO and field staff were held during 1990-94. Total project cost was $1.1 million, including technical assistance but excluding inputs from PVOs, government agencies, local volunteers and beneficiaries.	
Results/impact: In project villages the proportion of mothers giving children colostrum more than doubled (from 25% to 58%), while the proportion of those not giving water to infants under 4 months increased from 10% to 21%. The proportion of mothers in project villages feeding porridge at 6-8 months grew from 33% to 53%; fruit at 6-8 months from 12% to 27%; and meat/liver at 6-10 months from 18% to 35%. The prevalence of malnutrition (weight for age) among children under 36 months old dropped from 38% to 28% in the project villages, while it increased by 1% in control villages. A cost-effectiveness analysis found that the intervention cost $101 per child saved from underweight and $76 per child saved from stunting. An estimated 3,822 children's lives were saved at a cost of $282 per child.	
Programmatic implications: The project phased in nutrition communication following other health or social interventions in order to build on the motivation and self-determination that had been established. The project did influence men to buy more healthy foods for women and children. The use of visual aids made counseling more effective.	

Behavior(s): Early Initiation, Feeding Colostrum	
Country: India	**Study site:** Hajipur, Bihar, a town of 100,000 people
Author(s): Prasad, Bindeshwar, and Anthony M de L Costello	**Pub. Date:** 1995
Citation: Impact and Sustainability of a “Baby Friendly” Health Education Intervention at a District Hospital in Bihar, India. British Medical Journal. 310 (11 March 1995):621-623.	
Study design: During 7/92-2/93, a study was conducted at Sadar Hospital, a government-funded district hospital. Mothers delivering at the hospital were enrolled sequentially in three groups: (1) the control group (N=172); (2) the “early follow-up” group (N=195), who received health education within 20 working days after the training; and (3) the “late follow-up” group (N=101), who received health education six months after the training. All mothers were interviewed at home within 2 weeks post-partum. The early follow-up group were also interviewed prior to hospital discharge.	
Implementing agency: Sadar Hospital	**Project name:**
Intervention: The health education intervention consisted of having health workers provide mothers with information and assistance in breastfeeding. It was designed by a health education physician who spent 10 days training key staff in the maternity ward regarding the importance of early initiation and avoidance of prelacteal feeds and benefits of colostrum.	
Results/impact: All mothers in the early follow-up group received the health education. However, 6 months after the training only 36% of those in the late follow-up group were educated by health workers probably due to factors such as staff turnover and dilution of training. Among the early follow-up group, 60% initiated breastfeeding within 1 hour of delivery, compared with 3% of the control group. While 96% of the control group used prelacteal feeds, 43% of the early follow-up group did so ($p<0.001$). In the late follow-up group, 97% of the mothers who did not receive health education used prelacteal feeds, compared with 42% of those who did.	
Comments: Data on the duration of exclusive breastfeeding were not collected.	
Programmatic implications: The author concludes that refresher training should be offered after 6 months and practices should be monitored regularly.	

Behavior(s): Feeding Colostrum	
Country: India	**Study site:** Karnataka State, Hubli & Dharwad
Author(s): Tamagond, Bharati and K. Saroja	**Pub. Date:** 1992
Citation: Effect on Neonatal Feeding Practices of a Program to Promote Colostrum Feeding in India. Journal of Nutrition Education. 24:1 (January/February 1992):29-31.	
Study design: The sample of 120 mothers was interviewed at the hospitals' antenatal clinics and were observed and/or interviewed within 48 hours after delivery.	
Implementing agency: University of Agricultural Sciences	**Project name:**
Intervention: The researchers asked hospitals in the 2 cities to provide a list of expectant mothers who had at least 5 years of education and had at least one previous child who had not been fed colostrum. From these lists they randomly assigned mothers to three groups: (1) Experimental Group A, which was given 3 weekly lectures with 9 visual aids and a 10-minute discussion at the antenatal clinic (N=40); (2) Experimental Group B, which received 1 pamphlet weekly for 3 weeks, sent by mail prior to delivery (N=40); and (3) the control group, which did not receive any nutrition education (N=40). Both experimental groups received a postage-paid envelope that could be used to request additional information.	
Results/impact: Of the mothers in the experimental groups, 33% of those in Group A (lectures) and 43% of those in Group B (pamphlets) fed colostrum exclusively. An additional 23% of those in Group A and 10% in Group B fed some colostrum as well as honey and/or water. None of the mothers in the control group fed colostrum, even with supplements. The difference in impact between the lectures and pamphlets was not statistically significant. Middle- and high-income mothers and those with a pre-university course or above education were more likely to feed colostrum than other mothers.	
Programmatic implications: The researchers considered pamphlets to be more economical than lectures in terms of time, personnel involvement and costs. They note the need to tailor materials more closely to specific audiences and to reach rural, low-income mothers.	

Behavior(s): Early Initiation, Feeding Colostrum	
Country: Indonesia	**Study site:** Minahasa, a rural subdistrict of 1.1 million people
Author(s): Gerung, Albert A.	**Pub. Date:** 1989
Citation: Breastfeeding Promotion for Child Survival. In E. Kessel and A.K. Awan (eds.). Maternal and Child Care in Developing Countries. Thun, Switzerland: Ott Publishers, 1989.	
Study design: Data on breastfeeding were collected for all newborns during 1985-mid-1987. Subjects included 477 babies born prior to the intervention, 245 born after the intervention was implemented in the last nine months of 1986, and 194 born during the first 6 months of 1987.	
Implementing agency: Bethesda Hospital	**Project name:** Breastfeeding Promotion Program
Intervention: The Bethesda Hospital began rooming-in in 1982 but continued to separate newborns from their mother for 3-5 hours after birth and to provide glucose in water or formula during this time. In April 1986 the hospital changed its procedures: nursing and primary health care staff were trained in lactation management, newborns were immediately put to the mother's breast and no prelacteal feedings were permitted.	
Results/impact: The proportion of newborns who were exclusively breastfed was 33% in 1985 and 61% in Jan.-Mar. 1986. After the intervention, it rose to 94% in Apr.-Dec. 1986 and 87% in Jan.-June 1987.	
Programmatic implications: Changing hospital policies and training health workers were beneficial.	

Behavior(s): Feeding Colostrum	
Country: Chile	**Study site:** Santiago
Author(s): Valdés, Verónica et al.	**Pub. Date:** 1994
Citation: A Three-Day Lactation Course Can Change Professional Practices." Santiago, Chile: Department of Pediatrics, Catholic University of Chile, 1994.	
Study design: Two years after the course, a questionnaire was mailed to 318 course participants. In 2 mailings, 62 questionnaires were returned. Researchers then conducted telephone interviews with 38 randomly selected participants.	
Implementing agency: Catholic University of Chile	**Project name:** Breastfeeding Promotion Course
Intervention: In Oct. 1990 the Catholic University of Chile conducted a 3-day course for 360 health professionals on clinical practices.	
Results/impact: Maternity ward staff reported an increase in the practice of infants receiving colostrum as their 1st feeding from 75% before the course to 91% after the course. Other changes in practices included: assisting mother with 1st nursing, from 72% to 91%; supervision of breastfeeding technique, from 75% to 91%; recommendation of demand feeding, from 67% to 94%; and immediate rooming-in, from 31% to 44%. In pediatric outpatient care, staff changed from recommending introduction of weaning foods at 4.6 months to 6.0 months.	
Comments: The course appears to have improved reported behaviors two years later. Rooming-in policies still need attention. Weak research design due to reliance on health workers' reports and high attrition. No data on statistical significance were presented.	
Programmatic implications: Weak support for use of training to change behaviors of health professionals	

Behavior(s): Early Initiation, Feeding Colostrum, Continued Breastfeeding	
Country: Kenya	**Study site:** 58 hospitals nationwide
Author(s): Bradley, Janet E., and Joyce Meme	**Pub. Date:** 1992
Citation: Breastfeeding Promotion in Kenya: Changes in Health Worker Knowledge, Attitudes and Practices, 1982-89. Journal of Tropical Pediatrics. 38 (October 1992):228-233.	
Study design: The 1982 KAP survey of 195 health workers was used as a baseline. In 1989 the MOH interviewed 109 hospital policy-makers and senior staff and 175 maternity ward staff in 58 hospitals nationwide. These hospitals consisted of 41 government facilities and 17 private or religious facilities. The researchers report that the 1982 and 1989 surveys used similar samples, which were based on purposive selection of facilities and purposive and random sampling of subjects.	
Implementing agency: Ministry of Health	**Project name:**
Intervention: Following a 1982 KAP survey of health workers, the MOH implemented a breastfeeding promotion program: it adopted a Code of Marketing of Breastmilk Substitutes; it issued directives to all hospitals to stop distributing infant formula and giving routine prelacteal feedings and begin promoting early breastfeeding, full rooming-in; it appointed a national breastfeeding officer to organize training of more than 800 health workers in breastfeeding promotion and lactation management.	
Results/impact: Hospital policy-makers and maternity ward staff were more knowledgeable about breastfeeding in 1989 than in 1982. Practices improved dramatically. The proportion of health workers reporting that babies were put on the breast within one hour of birth increased from 14% in 1982 to 61% in 1989. The practice of giving prelacteal feeds declined from 93% of the health workers in 1982 to 48% in 1989. Routine use of infant formula declined from 54% in 1982 to 3% in 1989. The proportion of health workers advocating introduction of semi-solid food after 6 months increased from 13% in 1982 to 31% in 1989. Average duration of breastfeeding has increased from a mean of less than 14 months in 1979 to 19.4 months in 1989.	
Comments: The direct impact of the policy changes and training on breastfeeding practices is difficult to assess.	
Programmatic implications: Health workers who received training often did not improve practices in maternity wards. Training of policy-makers may not be productive, since “they do not generally see themselves in charge of maternity ward policy.” The non-availability of infant formula had an influence on changing hospital practices. Government directives were not widely read by health workers. If read, they were not understood.	

Behavior(s): Feeding Colostrum		
Country: Philippines	**Study site:** Baguio	
Author(s): Clavano, N.R.		**Pub. Date:** 1982
Citation: Mode of Feeding and its Effect on Infant Mortality and Morbidity. Journal of Tropical Pediatrics. 28 (December 1982):287-293.		
Study design: Records of 9,886 babies delivered at the hospital between 1/73 and 4/77 were studied, based on charts and case notes prior to discharge. Data on morbidity and mortality were compiled.		
Implementing agency: Baguio General Hospital and Medical Center	**Project name:**	
Intervention: In an urban tertiary hospital, clinical records of newborns were compared during two phases: (1) 1/73-3/75; when newborns were confined to nurseries and fed formula; and (2) 4/75-4/77, when breastfeeding support and rooming-in policies were initiated. The hospital changed its practices from bottlefeeding in nurseries with 8-12-hour starvation after birth to rooming-in, breastfeeding on demand, and 2-hour starvation period.		
Results/impact: After rooming-in and other changes, breastfeeding of newborns increased from 40% during 1/73-3/75 to 87% during 4/75-4/77, a 136% increase. Deaths from infection fell by 95%. Of the 88 children with clinical infection, 90% were formula-fed and 3% were breastfed. Of the 67 children with oral thrush, 94% were formula-fed and 3% were breastfed. Of the 138 children with diarrhea, 90% were formula-fed and 4% were breastfed. All of the 38 deaths from diarrhea and 96% of the 67 deaths due to infection were to formula-fed infants.		
Programmatic implications: Mixed-fed newborns fared better than formula-fed ones, suggesting the protective effect of colostrum.		

Section III

Exclusive Breastfeeding

Behavior 3A. Exclusive Breastfeeding

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Comm-unity Educ.**	**Post-partum Clinics**	**Page #**
Haider et al., 1996	Bangladesh	A		/					/			53
Alvarado et al., 1996	Chile	A	/	/		/					/	54
AHLACMA, 1993	Honduras	A				/		/	/			55
Rivera et al., 1993	Honduras	A				/		/				56
Gottert, 1995; Ross, 1997	Mali	A				/	/			/		57
Langer et al., 1996	Mexico	A				/						58
NCP, 1995b; Altobelli, 1993	Peru	A		/	/		/					59
Neyzi et al., 1988; Neyzi et al., 1991a	Turkey	A					/		/			60
Neyzi et al., 1991b	Turkey	A									/	62
Waldenström & Nilsson, 1994	Sweden	A		/								63
Dungy et al., 1992	U.S.A.	A		/								64
Frank et al., 1989	U.S.A.	A		/								65

Behavior 3B. Exclusive Breastfeeding

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Comm-unity Educ.**	**Post-partum Clinics**	**Page #**
Barros et al., 1995	Brazil	B									/	66
Lutter et al., 1997	Brazil	B		/								67
Valdés et al., 1993; Perez & Valdés, 1991; Pugin et al., 1996	Chile	B	/	/	/						/	68
Valdés et al., 1996	Chile	B									/	69
Manoff International, 1984	Indonesia	B					/		/	/		70
Morrow et al., 1996	Mexico	B	/						/			71
Rodriguez-Garcia et al., 1990	Mexico	B	/			/						72
Vandale-Toney et al., 1992	Mexico	B		/	/							73
Strachan-Lindenberg et al., 1990	Nicaragua	B		/								74
Hofmeyr et al., 1991	South Africa	B				/						75

Reference	Country	Study Design	Pre-natal Educ.	Hospital Policies/ Actions	Health Worker Training	Peer Coun-seling	Mass Media	Women's Groups	Home Visits	Comm-unity Educ.	Post-partum Clinics	Page #
Kistin et al., 1994	U.S.A.	B				/						76
Sciacca et al., 1995	U.S.A.	B	/									77
Wiles, 1984	U.S.A.	B	/									78

Behavior 3C. Exclusive Breastfeeding

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Prenatal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Comm-unity Educ.**	**Post-partum Clinics**	**Page #**
Rea & Berquó, 1990	Brazil	C		/	/		/					79
Burkhalter & Marin, 1991	Chile	C	/			/			/		/	80
Stone-Jiménez & de Maza, 1993	Guatemala	C				/		/				81
NCP, 1995; Hernandez et al., 1995	Honduras	C			/		/					83
Popkin et al., 1991; Huffman et al., 1991	Honduras	C		/	/				/			84
Wellstart International, 1998	India	C		/	/							86
IMSS, [no date]	Mexico	C		/	/		/	/			/	87
Huffman, 1991	Panama	C		/								88
Creed-Kanashiro et al., 1994 and 1995	Peru	C					/			/		89

Reference	Country	Study Design	Prenatal Educ.	Hospital Policies/ Actions	Health Worker Training	Peer Coun-seling	Mass Media	Women's Groups	Home Visits	Comm-unity Educ.	Post-partum Clinics	Page #
Nylander et al., 1991	Norway	C		/	/							90

Behavior(s): Exclusive Breastfeeding	
Country: Bangladesh	**Study site:** Dhaka
Author(s): Haider, R. et al.	**Pub. Date:** 1996
Citation: Breast-feeding Counseling in a Diarrhoeal Disease Hospital. Bulletin of the World Health Organization. 74:2 (1996):173-179.	
Study design: The study was designed to restore exclusive breastfeeding among mothers of partially breastfed infants under 12 weeks old admitted to hospital due to diarrhea. Mothers were randomly assigned to the control group (N=125), which received routine group health education sessions, or the intervention group (N=125), which received individual counseling on exclusive breastfeeding. Two weeks after discharge, structured observations and 24-hour recall were used to assess breastfeeding practices during home visits.	
Implementing agency: International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh (ICDDR,B)	**Project name:**
Intervention: Mothers in the intervention group received 3 individual counseling sessions during their infant's hospital stay and 2 home visits 1 & 2 weeks after hospital discharge. Lactation counselors assisted mothers with the baby's position and attachment.	
Results/impact: Among the control group, 6% of mothers were breastfeeding exclusively at discharge, and 8% at 2 weeks after discharge. Among the intervention group, 60% of mothers were breastfeeding exclusively at discharge ($p<0.001$), and 75% at 2 weeks after discharge ($p<0.001$).	
Comments: In order to aid retention, counselors presented only 3-4 items of information on breastfeeding in each session. Counselors remarked that the home visits were useful to provide reinforcement of messages and reassurance to mothers. "The lack of privacy for counselling sessions in the hospital may have been a constraint." (p. 178)	
Programmatic implications: Individual counseling was beneficial in restoring exclusive breastfeeding.	

Behavior(s): Exclusive Breastfeeding	
Country: Chile	**Study site:** Conchalí, a low-income slum area of Santiago
Author(s): Alvarado M., Reynaldo et al.	**Pub. Date:** 1996
Citation: Evaluation of a Breastfeeding-support Programme with Health Promoters' Participation. Food and Nutrition Bulletin. 17:1 (1996):49-53.	
Study design: The purpose of this study was to evaluate the integration of breastfeeding promotion into MCH care and the use of health promoters in participatory education. The intervention group consisted of pregnant women living in the area covered by the health project run by San Luis de Huechuraba, an NGO working in community health (N=66). The control group was drawn from women from a nearby area with similar socio-economic characteristics covered by the public health center Lucas Sierra (N=62). Subjects were enrolled between Sept. 1990 and March 1991 and were followed for 6 months.	
Implementing agency: Nutrition Department, Faculty of Medicine, University of Chile	**Project name:**
Intervention: Mothers received counseling and education on breastfeeding from health professionals and peer educators. Women living in the community with experience in health promotion were trained as breastfeeding and general MCH care promoters. They played an important role in enrolling, educating and following -up the mothers; they were paid US$80 monthly. Health promoters visited the women in the intervention group at home in the last 3 months of pregnancy and in the maternity ward following delivery in order to give support to mothers and encourage them to stay in the breastfeeding program. The health promoters also organized 2-hour workshops on breastfeeding techniques, which were attended by mothers in the intervention group twice during pregnancy and monthly during their infant's 1st six months of life. Mothers and infants in the intervention group received follow-up care at the health center 3 times during the 1st month postpartum and monthly for the next 5 months. Those in the control group visited the clinic at 1, 2, 4 and 6 months postpartum.	
Results/impact: At 1 month of age, 100% of the infants in the intervention group and 76% of those in the control group were being exclusively breastfed. Among those in the intervention group, 90% were still being exclusively breastfed at 4 months of age, and 42% at 6 months of age. In contrast, only 8% of those in the control group were being exclusively breastfed at 4 months of age, and none were exclusively breastfed at 6 months of age ($p<0.01$). Only 2% of the infants in the intervention group had been weaned by 6 months of age, compared with 38% of those in the control group ($p<0.01$).	
Comments: Infants in the intervention group gained more weight than those in the control group, with significant differences in the 1st, 4th, 5th and 6th months. Four mothers in the intervention group achieved relactation. Mothers appreciated receiving fixed appointments at the clinic, thus saving them time.	
Programmatic implications: Frequent clinic visits and visits and educational workshops by peer educators were beneficial.	

Behavior(s): Exclusive Breastfeeding	
Country: Honduras	**Study site:** 40 communities in the Department of Francisco Morazán in central Honduras; each community had roughly 440 inhabitants, including 84 mothers and 13 infants under 1 year.
Author(s): Asociación Hondureña de Lactancia Materna (AHLACMA), Plan en Honduras, and the Population Council.	**Pub. Date:** 1993
Citation: Proyecto: Promoción de lactancia materna y espaciamiento de embarazos en área rural: Informe Technico Final. Tegucigalpa, Honduras: AHLACMA, April 1993.	
Study design: Of the 40 communities selected for the study, 20 were assigned to the experimental group in which rural peer educators educated mothers on breastfeeding and family planning; 20 constituted the control group in which community health educators, midwives, and volunteers provided routine health education. The baseline survey of 416 mothers was conducted during Oct.-Nov. 1990; the post-intervention survey of 447 mothers was done in Dec. 1991-Jan. 1992. Both surveys interviewed all mothers with children under 1 in each community. An intermediate survey of 84 mothers in 7 communities was done in Sept. 1991.	
Implementing agency: Asociación Hondureña de Lactancia Materna (AHLACMA)	**Project name:** Promotion of Breastfeeding and Birth Spacing in a Rural Area
Intervention: The 23-month project (from 6/1990 to 4/1992) trained volunteer peer counselors in rural communities as well as community health workers in breastfeeding and family planning. The peer counselors organized groups of pregnant women and women with children under age 1. These groups met monthly to discuss problems and share information on family planning and breastfeeding. The peer counselors also visited mothers in their homes, distributed educational materials and referred mothers to family planning services. In each community 3-4 peer counselors were trained. Each peer counselor visited 1-2 mothers monthly. An educational meeting attended by at least 5 mothers was held monthly in each community. The project distributed monographs and 4-page leaflets on breastfeeding and birth spacing.	
Results/impact: Of the mothers in the intervention group, 45% attended a group education meeting and 43% had been visited in their home. The proportion of mothers who received information about breastfeeding increased from 30% to 71% among those in the experimental group and from 33% to 41% among those in the control group ($p<0.001$). The proportion of mothers in the intervention group breastfeeding exclusively increased significantly from 20% to 50% at 2 months postpartum and from 9% to 31% at 3 months postpartum. Median duration of exclusive breastfeeding increased in the intervention group from 1.22 to 3.01 months, while it declined in the control group from 1.32 months to 1.22 months.	
Comments: Data on statistical significance were not provided for exclusive breastfeeding. The peer counselors required considerable supervision; supervisors visited each village for several hours each month.	
Programmatic implications: The community volunteers were more effective in promoting breastfeeding than the traditional health workers.	

Behavior(s): Exclusive Breastfeeding	
Country: Honduras	**Study site:** Las Palmas, low-income urban area of San Pedro Sula
Author(s): Rivera, Ada et al.	**Pub. Date:** 1993
Citation: The Promotion of the Lactational Amenorrhea Method and Child Spacing through Breastfeeding Advocates. Washington, D.C.: Institute for Reproductive Health, Georgetown University, La Liga de Lactancia Materna de Honduras, and INOPAL II, Population Council, 1993.	
Study design: This community-level intervention sought to educate mothers on exclusive breastfeeding and use of the lactational amenorrhea (LAM) method of child spacing through mothers' support groups and a formal referral process to other health services. Communities in the Las Palmas area were assigned to either the control or intervention group. The July 1990 baseline survey covered 848 women. The January 1992 endline survey, conducted after 1 year of activities, covered 922 women — 435 from the control group and 487 from the intervention group.	
Implementing agency: La Leche League of Honduras	**Project name:**
Intervention: In both control and intervention communities 233 health professionals were trained in breastfeeding techniques and LAM. In the intervention communities, mothers living in the community were trained to serve as breastfeeding advocates, provide information on LAM, and make referrals to family planning services. The 27 breastfeeding advocates contacted 6,077 mothers during 1991. A total of 376 mothers attended at least one support group meeting; 12 groups met monthly.	
Results/impact: After 12 months of counseling and support group activities, no significant differences in the prevalence and duration of exclusive breastfeeding were observed. For both control and intervention groups, baseline and endline surveys found that infants were exclusively breastfed for about 4 weeks. Nevertheless, improved breastfeeding practices were reported. Among mothers in the intervention group, the average age when water was introduced increased from 51.5 days at baseline to 61.8 days at endline. The limited impact of the breastfeeding advocates may be due to their limited coverage. Only 12% of the mothers of infants had any contact with the breastfeeding advocates, and only 7% attended a support group meeting. Women who had contact with the breastfeeding counselors, either individually or within a support group, were more likely than other women to breastfeed exclusively longer and postpone the introduction of water, milk or other liquids. Mothers of infants under 6 months old who had contact with the breastfeeding counselor breastfed exclusively for 9.6 weeks, compared with 4.3 weeks among mothers in the control group.	
Comments: Recruiting breastfeeding advocates from among support group members proved more effective than recruiting from the community as a whole, due to the high attrition rate of the latter group. Breastfeeding advocates were not paid to conduct their monthly support group but were offered an additional US$4 per meeting for organizing additional groups to compensate for a shortage of volunteers.	
Programmatic implications: Counseling by peers and attendance at mothers' support groups did not have a significant effect on exclusive breastfeeding in the community as a whole. However, mothers who did have contact with the peer counselor or attended a group meeting did exclusively breastfeed longer than other mothers.	

Behavior(s): Feeding Colostrum, Exclusive Breastfeeding	
Country: Mali	**Study site:** 4 regions with a population of 761,000
Author(s): (1) Gottert, Peter; (2) Ross, Jay	**Pub. Date:** 1995, 1997
Citation: (1) Final Report: Mali Nutrition Communication Project, 1989-1995. Washington, D.C.: Academy for Educational Development, May 1995; (2) Cost-effectiveness of the Nutrition Communication Project in Mali. Washington, D.C.: Academy for Educational Development, Support for Analysis & Research in Africa (SARA) project, July 1997.	
Study design: During 1989-90 the project conducted ethnographic research, 16 focus groups and 2 market surveys. A baseline KAP survey was conducted in 1990 in 47 villages; 835 women and 524 men were interviewed and data on 657 children's nutritional status were collected. Project interventions were done in 24 villages matched with 24 control villages. A mid-term survey in 1993 covered 272 women, 81 men and 211 children 4 project villages and 4 control villages. An impact evaluation survey was done in 12/94-1/95 covering 712 women, 354 men, and 845 children under 3 in 24 project villages and 24 control villages.	
Implementing agency: MOH, international PVOs, local NGOs	**Project name:** Nutrition Communication Project
Intervention: This six-year project (1989-1995) aimed to improve the nutritional status of rural women and children under 3. It covered 90,026 children under age 3 in four regions. The project promoted specific child feeding behaviors: at least 3 supervised meals per day, use of a separate feeding bowl for children 12-36 months old, and recuperative feeding skills. It also promoted vitamin A-rich foods, recognition of men's responsibilities, better food choices, and exclusive breastfeeding through 4 months. The project used interpersonal and group counseling from field workers to reach women and village mobilization meetings, role plays and radio to reach men. Supporting materials were a village story book, facilitator's guide, health cards, a manual for field workers, a 10-part radio drama, 10 radio spots, a teachers' activity guide, and 3 literacy booklets. A series of 6 regional skill-building workshops for 360 PVO and field staff were held during 1990-94. Total project cost was $1.1 million, including technical assistance but excluding inputs from PVOs, government agencies, local volunteers and beneficiaries.	
Results/impact: In project villages the proportion of mothers giving children colostrum more than doubled (from 25% to 58%), while the proportion of those not giving water to infants under 4 months increased from 10% to 21%. The proportion of mothers in project villages feeding porridge at 6-8 months grew from 33% to 53%; fruit at 6-8 months from 12% to 27%; and meat/liver at 6-10 months from 18% to 35%. The prevalence of malnutrition (weight for age) among children under 36 months old dropped from 38% to 28% in the project villages, while it increased by 1% in control villages. A cost-effectiveness analysis found that the intervention cost $101 per child saved from underweight and $76 per child saved from stunting. An estimated 3,822 children's lives were saved at a cost of $282 per child.	
Programmatic implications: The project phased in nutrition communication following other health or social interventions in order to build on the motivation and self-determination that had been established. The project did influence men to buy more healthy foods for women and children. The use of visual aids made counseling more effective.	

Behavior(s): Early Initiation, Exclusive Breastfeeding	
Country: Mexico	**Study site:** Dr. Luis Castelazo Ayala IMSS Gyneco-Obstetrics Hospital
Author(s): Langer, Ana et al.	**Pub. Date:** 1996
Citation: Intrapartum Social Support and Exclusive Breastfeeding in Mexico. Washington, D.C.: Wellstart International, Expanded Promotion of Breastfeeding Program, September 1996.	
Study design: Study used randomized clinical trial with 363 women in control group and 361 in intervention group.	
Implementing agency: National Institute of Public Health & MOH	**Project name:**
Intervention: Intervention consisted of providing first-time mothers with psychosocial support from another woman (a “doula”) during labor and delivery. The doula visited the mother in the maternity ward and discussed breastfeeding techniques. One month postpartum, community educators evaluated breastfeeding practices during home visits.	
Results/impact: Only 11% of the intervention group and 8% of the control group breastfed in the first 8 hours after birth. The intervention did not alter hospital norms that delay breastfeeding. However, at one month postpartum, 12% of the intervention group compared with 7% of the control group were exclusively breastfeeding. Exclusive breastfeeding was relatively low because of the incidence of full breastfeeding (giving breastmilk with teas and/or water); at one month postpartum, 37% of the intervention group and 36% of the control group were providing full breastfeeding.	
Comments: An ethnographic study and cost-effectiveness study were also done.	
Programmatic implications: Having social support during delivery had no impact on early initiation but was associated with an increase in exclusive breastfeeding at one month postpartum.	

Behavior(s): Exclusive Breastfeeding	
Country: Peru	**Study site:** Lima
Author(s): (1) Nutrition Communication Project; (2) Laura C. Altobelli	**Pub. Date:** (1) 1995; (2) 1993
Citation: (1) IEC Component of the Peru Breastfeeding Project: 1988-1990. Washington, D.C.: Academy for Educational Development, 1995b; (2) Development of Complementary Training and Educational Materials on Exclusive Breastfeeding in Peru. In The Proceedings of an International Conference on Communication Strategies to Support Infant and Young Child Nutrition. Edited by Peggy Koniz-Booher. Cornell International Nutrition Monograph Series Numbers 24 and 25, 1993, p. 133-147.	
Study design: Baseline studies consisted of: a rapid ethnographic assessment of 80 mothers' breastfeeding beliefs and practices in 4 districts of Lima; a KAP survey of health personnel; a survey of postpartum mothers in each of the three hospitals used in the study. The post-intervention surveys covered hospital personnel (post-test N=327) and a prospective follow-up of 321 mother-infant pairs who had delivered at the three hospitals. Mothers were interviewed at home at 2, 4, 8 & 12 weeks postpartum.	
Implementing agency: Universidad Peruana Cayetano Heredia	**Project name:** Peru Breastfeeding Project
Intervention: The two-year project (10/88-9/90) aimed to change hospital practices through staff training and provision of educational materials. At the two intervention hospitals (Cayetano Heredia Hospital and Dos de Mayo Hospital), which serve low-income urban residents, the project provided to hospital personnel a 20-hour training course in breastfeeding techniques and counseling and disseminated educational materials, including a pocket reference guide and flip chart for health workers and a poster/calendar for mothers. Loayza Hospital, a public hospital, served as the control group. Messages encouraged mothers to breastfeed exclusively from birth to 6 months and frequently, with no water and traditional teas. Cost of IEC component, including technical assistance: $57,000.	
Results/impact: At 2 weeks postpartum, 62% of the infants at Cayetano were exclusively breastfed, 35% at Dos de Mayo, and 20% at Loayza. The prevalence of exclusive breastfeeding at 12 weeks postpartum was 52% among 115 mothers who delivered at the hospital with the most complete and intensive educational program (Cayetano), compared with 17% among 99 mothers at the other intervention hospital (Dos de Mayo) and 8% among 107 mothers at the control hospital (Loayza). (The difference between Dos de Mayo and Loayza was not significant at 12 weeks postpartum.)	
Comments: A follow-up study after 2 ½ years found that due to staff turnover health personnel had inadequate knowledge of breastfeeding techniques. Some materials remained in use.	
Programmatic implications: Training health workers and providing print materials were beneficial. More exposure was associated with improved breastfeeding practices. Benefits of training were lost after 2 ½ years due to staff turnover.	

Behavior(s): Exclusive Breastfeeding	
Country: Turkey	**Study site:** Istanbul social security hospital
Author(s): Neyzi, Olcay et al.	**Pub. Date:** 1988
Citation: Results of an Educational Intervention Study on Promotion of Breast-feeding. Istanbul, Turkey: Institute of Child Health, University of Istanbul, and Barem Research Company, 1988.	
Study design: Mothers from maternity wards were assigned to the study and control groups according to ward number and day of the week. Subjects were interviewed prior to hospital interventions, at home on the 5-7th day postpartum, and at monthly home visits for 6 months. The study covered 1,190 mother-infant pairs; of these, 442 mothers in the study group and 499 in the control group were followed for 6 months.	
Implementing agency: University of Istanbul	**Project name:**
Intervention: The purpose of the study was to examine the impact of an educational intervention on exclusive breastfeeding, diarrheal disease and acute respiratory infections. The study site was a social security hospital that has large numbers of deliveries. Mothers are usually discharged on the 2nd day after delivery. Mothers in the study group were exposed to: an 8-minute film on ORT, a 10-minute film on the advantages and practice of breastfeeding, a 40-minute group education session on the practice of breastfeeding, a second 20-30 minute educational session at home on the 5-7th postpartum days, and booklet on breastfeeding. The control group was exposed only to the ORT film and a home visit on days 5-7 that covered domestic hygiene and baby care. The intervention took place between 8/1986 and 8/1988; the entire project extended from 4/86 to 12/88.	
Results/impact: In the first week after delivery, 47% of the mothers in the study group were exclusively breastfeeding, compared with 12% in the control group. By the 1st month postpartum, 16% of the study group mothers and 4% of the control group mothers were exclusively breastfeeding. By the 2nd month postpartum, these proportions had dropped to 4% and 2%, respectively. By the 3rd month, fewer than 1% of either group were exclusively breastfeeding.	
Comments: Among mothers aged 16-20 in both groups, 79% planned to breastfeed, compared to 84-86% of those 21 or older. Nevertheless, most mothers initiated breastfeeding; only 3-4% of the newborns were entirely formula-fed in their 1st week. The educational intervention was slightly more effective among first-time mothers than those with prior child care experience. Data significance was not reported.	
Programmatic implications: The in-hospital education and home visits were beneficial for the 1st 2 months postpartum.	

Behavior(s): Exclusive Breastfeeding	
Country: Turkey	**Study site:** Istanbul
Author(s): Neyzi, Olcay et al.	**Pub. Date:** 1991
Citation: An Educational Intervention on Promotion of Breastfeeding. Pediatric and Perinatal Epidemiology. 5 (1991a):286-298	
Study design: The study was done between August 1986 and December 1988 in a social security obstetric hospital in Istanbul. Two of the hospital's 10 wards were randomly selected 4 days each week; mothers were assigned to the control or intervention group according to the day of the week that they delivered. A total of 1,190 mothers were recruited into the study, but 21% dropped out, mostly because interviewers could not locate their homes; 941 mothers were followed regularly for 6 months. The intervention group consisted of 442 first-time mothers who had delivered in hospital. The control group of 499 mothers received routine follow-up. All subjects were visited 1-8 hours after delivery and at home monthly for 6 months.	
Implementing agency: Institute of Child Health, University of Istanbul	**Project name:**
Intervention: Mothers in the control group were shown an 8-minute film on oral rehydration therapy and domestic hygiene and received education on domestic hygiene and baby care during home visits on days 5-7 postpartum. Mothers in the intervention group saw the same video and had a home visit similar to that of the control group. At the hospital they also viewed a 10-minute video on the advantages and practice of breastfeeding. Their home visit included a 20-30 minute educational session on breastfeeding and they were given a booklet on breastfeeding.	
Results/impact: At 1 week postpartum, 12% of mothers in the control group and 47% of mothers in the intervention group were exclusively breastfeeding. At 1 month postpartum, 16% of mothers in the control group and 4% of those in the intervention group were exclusively breastfeeding. At 2 months postpartum, this proportion fell to 2% of mothers in the control group and 4% of those in the intervention group. At 3 months postpartum, only 1% of the mothers in the intervention group were still exclusively breastfeeding, compared with 0.2% of those in the control group. At 4 months postpartum only 1 mother (0.2%) in the intervention group was exclusively breastfeeding, and the proportion of mothers providing only artificial nutrition was similar between the two groups.	
Comments: The hospital lacked rooming-in and routines supportive of breastfeeding. Physicians did not always promote breastfeeding; 22% of mothers who began supplementation or stopped breastfeeding by 1 month postpartum stated that they were following their doctor's advice. Most families own a TV and watch TV extensively, but mothers did not mention TV as a source of information on infant feeding. Younger and illiterate mothers were less likely to express a desire to breastfeed their babies, compared with older and more educated mothers.	
Programmatic implications: The educational intervention in the 1st week after delivery had some impact for 2 months postpartum. The researchers suggest that changing hospital policies and routines and promoting breastfeeding on TV could be beneficial.	

Behavior(s): Exclusive Breastfeeding	
Country: Turkey	**Study site:** Istanbul
Author(s): Neyzi, Olcay et al.	**Pub. Date:** 1991
Citation: An Educational Intervention on Promotion of Breastfeeding Complemented by Continuing Support. Pediatric and Perinatal Epidemiology. 5 (1991b):299-303.	
Study design: Subjects consisted of 588 mothers who had delivered in hospital and interviewed for another research study. All mothers had attended 2 educational sessions on breastfeeding after delivery. The control group of 442 mothers received routine follow-up. The intervention group (N=146) received continuing support through visits to the well-baby clinic at the hospital.	
Implementing agency: Institute of Child Health, University of Istanbul	**Project name:**
Intervention: During the 1st home visit 1 week after delivery, mothers in the intervention group were given appointment cards to bring their babies to the pediatric hospital for well-baby care at 2 weeks of age. Mothers were asked to make monthly visits during the next 4 months and were given the doctors' telephone number and told to call or visit whenever there was a problem. Mothers made 6 visits on average; a close relative accompanied the mother in 90% of the visits. Mothers were seen by the same pediatric resident over the 4-month period. During each visit the doctor spent 5-15 minutes with the mother discussing breastfeeding and infant feeding.	
Results/impact: At 1 week postpartum, 47% of mothers in both the control and intervention groups were exclusively breastfeeding. An additional 22% of mothers in the control group and 48% in the intervention group were providing breastmilk and water only. At 1 month postpartum, 16% of mothers in the control group and 14% of those in the intervention group were exclusively breastfeeding. At 2 months postpartum, this proportion fell to 4% of mothers in the control group and 17% of those in the intervention group. At 3 and 4 months postpartum, 6% and 5% of the mothers in the intervention group were still exclusively breastfeeding, compared with l% or less of those in the control group. In addition, more than 63% of mothers in the intervention group were providing breastmilk and water only during months 1-4 postpartum, compared with 45% or fewer mothers in the control group.	
Comments: The authors state, "early introduction of non-milk liquids is a deep-rooted tradition and is difficult to change. Although they had been instructed otherwise, 47.9% of the mothers were already supplementing breast feeding with water at the time of their first visit to the hospital." (p. 302)	
Programmatic implications: Regular medical visits were beneficial in maintaining breastfeeding up to 4 months postpartum.	

Behavior(s): Exclusive Breastfeeding		
Country: Sweden	**Study site:** Stockholm	
Author(s): Waldenström, Ulla, and Carl-Axel Nilsson		**Pub. Date:** 1994
Citation: No Effect of Birth Centre Care on Either Duration or Experience of Breast Feeding, But More Complications: Findings from a Randomised Controlled Trial. Midwifery. 10 (1994):8-17.		
Study design: Subjects completed questionnaires at the 1st visit to the birth center, 2 months after the due date, and 1 year post-partum. The 3rd questionnaire was completed by 299 women in the experimental group and 275 in the control group.		
Implementing agency: Karolinska Hospital and Swedish Planning and Rationalization Institute for Health and Social Services		**Project name:**
Intervention: In this randomized control trial, the breastfeeding experiences of women who delivered at a birth center at South Hospital and a hospital were compared. Women with due dates between 10/89 and 2/92 were randomly assigned to the experimental group (N=617) offering birth center care or the control group with standard obstetric care (N=613). The birth center provides psychologically supportive care, with minimal medical technology. Post-partum stays were 1.5 days for the experimental group and 2.8 days for the control group. However, routines in the initiation of breastfeeding were similar for both groups: early and unrestricted suckling, feeding on demand, and correct positioning.		
Results/impact: At 2 months post-partum, 93% of both experimental and control groups were exclusively breastfeeding. Differences in breastfeeding duration were not statistically significant.		
Comments: All subjects were highly motivated to breastfeed. The authors conclude that the similarity in breastfeeding initiation routines may have been more important for breastfeeding duration than differences in “continuity of care, childbirth education, obstetric analgesia, support in labor and early discharge.”		
Programmatic implications: The place of delivery appears to be less important than breastfeeding initiation routines.		

Behavior(s): Exclusive Breastfeeding		
Country: U.S.A.	**Study site:** Iowa City, Iowa	
Author(s): Dungy, Claibourne I. et al.		**Pub. Date:** 1992
Citation: Effect of Discharge Samples on Duration of Breast-Feeding. Pediatrics. 90:2 (August 1992):233-237.		
Study design: The sample of 146 women were interviewed in the hospital within 24 hours of delivery and by telephone at 2, 4, 6 and 8 weeks postpartum.		
Implementing agency: University of Iowa	**Project name:**	
Intervention: The study was conducted during Feb.-Apr. 1990 in a community hospital serving a predominantly white, middle-income, well-educated population. Women who initiated breastfeeding during their hospital stay were randomly assigned to receive either a specially prepared discharge pack containing a manual breast pump but no infant formula or a commercially available infant formula package. The specially prepared sample pack, which cost $15 to produce, contained a manual breast pump, breast pads and breast cream.		
Results/impact: Women who received the discharge pack containing the breast pump continued exclusive breastfeeding for an average of 4.2 weeks, compared with 2.8 weeks among those who received the pack with the infant formula ($p<0.05$). Among the women who stated in their hospital interviews that they believed that bottle-feeding made night-time feeding easier, those who received the breast pump breastfed exclusively for 4.4 weeks, compared with 2.1 weeks among those who received infant formula ($p<0.05$).		
Programmatic implications: The researchers concluded that “maternal attitudes are more important predictors of duration of breast feeding than are sociodemographic characteristics.”		

Behavior(s): Exclusive Breastfeeding	
Country: U.S.A.	**Study site:** Boston, MA, low-income, inner-city population
Author(s): Frank, Deborah A. et al.	**Pub. Date:** 1987
Citation: Commercial Discharge Packs and Breast-Feeding Counseling: Effects on Infant-Feeding Practices in a Randomized Trial. Pediatrics. 80:6 (December 1987):845-854.	
Study design: The 343 women assigned to 1 of 4 treatments were interviewed at 4 months postpartum by a nutritionist, using a 24-hour dietary recall to measure infant-feeding practices; 324 women completed the study.	
Implementing agency: Boston City Hospital	**Project name:** Boston University School of Medicine, A Randomized Trial to Promote the Duration of Breastfeeding
Intervention: The study, conducted from May 1984 to Sept. 1985, assessed exclusive breastfeeding among women delivering at Boston City Hospital. The 343 subjects were randomly assigned to 1 of 4 treatments: (1) routine breastfeeding counseling and commercial discharge pack; (2) routine breastfeeding counseling and research discharge pack; (3) research breastfeeding counseling and commercial discharge pack; and (4) research breastfeeding counseling and research discharge pack. Routine counseling consisted of nursing contacts, infrequent breastfeeding classes, and handouts. Research counseling consisted of individual counseling in the hospital and 8 telephone calls up to 12 weeks postpartum. The research discharge pack contained educational pamphlets advocating breastfeeding and breast pads. The commercial discharge pack contained pamphlets provided by infant formula companies, 2 nipples and 2 bottles of sterile water.	
Results/impact: Compared with routine counseling, research counseling delayed the 1st introduction of solid foods but did not affect breastfeeding by 4 months postpartum. Women who received the research pack were more likely to be exclusively breastfeeding at 4 months postpartum than those who received the commercial pack ($p<0.01$). The group with the research counseling and research discharge pack had the highest rates of exclusive breastfeeding (20% at 3 months and 9% at 4 months); the other 3 intervention groups had 6% or fewer infants exclusively breastfed at 4 months ($p<0.05$).	
Comments: The lack of impact of the research counseling may be due to the fact that the hospital was already doing breastfeeding promotion and offered printed information and a breastfeeding hotline. Even though it contained no formula, the commercial discharge pack did affect breastfeeding duration, suggesting the importance of messages unequivocally supporting breastfeeding.	
Programmatic implications: The individual counseling in hospital & follow-up telephone calls were beneficial for 2 months postpartum. The discharge pack promoting breastfeeding was beneficial for 4 months postpartum.	

Behavior(s): Exclusive Breastfeeding	
Country: Brazil	**Study site:** Guarujá, a city of 250,000 people in São Paulo state
Author(s): Barros, F.C. et al.	**Pub. Date:** 1995
Citation: The Impact of Lactation Centres on Breastfeeding Patterns, Morbidity and Growth: A Birth Cohort Study. Acta Paediatr. 84 (1995):1221-1226.	
Study design: This longitudinal study followed 605 infants from birth up to the age of 6 months. All infants were delivered at the city's largest maternity hospital during 1-2/93 and were in rooming-in during their hospital stay, and were referred to the city's 2 lactation centers in the 1st week after hospital discharge. Infants who had been taken to a lactation center by 4 months postpartum were considered the intervention group (N=289). Those who did not go to a center served as the control group (N=246). Participating mothers were visited at home when the babies were 1, 4, & 6 months old.	
Implementing agency: Universidade Federal de Pelotas	**Project name:**
Intervention: More than half of the mothers had taken their child to a center, and 2/3rds had attended 3 or more times. The centers provided individual counseling, group consultations (4 mother-infant pairs at a time), and assistance with specific breastfeeding problems.	
Results/impact: Among those infants in the intervention group who had attended a lactation center, 55% were exclusively breastfed at 1 month postpartum ($p<0.001$), 43% at 4 months ($p<0.001$), and 15% at 6 months ($p<0.001$). In contrast, 31% of infants in the control group who had not attended a center were exclusively breastfed at 1 month postpartum, 18% at 4 months, and 6% at 6 months. Infants who had attended a center more frequently than others had better breastfeeding patterns: 23% of those attending 5 or more times were exclusively breastfed at 6 months of age.	
Comments: Researchers controlled for factors associated with attendance at a lactation center such as use of prenatal care, receiving information on breastfeeding during pregnancy, and years of schooling. Younger women and 1st-time mothers were more likely than other women to attend a center.	
Programmatic implications: Lactation centers were beneficial.	

Behavior(s): Exclusive Breastfeeding		
Country: Brazil	**Study site:** Santos	
Author(s): Lutter, Chessa K. et al.		**Pub. Date:** 1997
Citation: The Effectiveness of a Hospital-Based Program to Promote Exclusive Breast-Feeding among Low-Income Women in Brazil. American Journal of Public Health 87:4 (April 1997):659-663.		
Study design: Data were collected from hospital records and interviews prior to hospital discharge and at home at 30 & 90 days post-partum. Exclusive breastfeeding was measured by 24-hour recall.		
Implementing agency: University of Campinas		**Project name:**
Intervention: Low-income urban women delivering between 6/92 and 3/93 were enrolled in a prospective study comparing those who delivered at a hospital with an active breastfeeding promotion program (N=236) with those who delivered at a nearby control hospital (N=206).		
Results/impact: Women who delivered in the hospital with breastfeeding promotion breastfed exclusively for an average of 75 days, compared with 22 days among those in the control hospital ($p<0.01$). Women in the program were more likely to receive breastfeeding information during prenatal care, but such information was not associated with exclusive breastfeeding.		
Programmatic implications: “Providing emotional as well as technical support to breast-feeding women” is important (p. 662). “[The program provides mothers with time to exchange ideas and experiences among themselves. Mothers show one another directly how to breast-feed and how to solve breast-feeding problems, and thus learn to trust their own judgment as well as that of other mothers.” (p. 662).		

Behavior(s): Early Initiation, Exclusive Breastfeeding	
Country: Chile	**Study site:** Santiago, urban middle-class community
Author(s): (1) Valdés, Verónica et al.; (2) Pérez, Alfredo, and Verónica Valdés; (3) Pugin, Edda et al.	**Pub. Date:** (1) 1993; (2) 1991; (3) 1996
Citation: (1) The Impact of a Hospital and Clinic-based Breastfeeding Promotion Programme in a Middle Class Urban Environment. Journal of Tropical Pediatrics. 39 (June 1993):142-151; (2) Santiago Breastfeeding Promotion Program: Preliminary Results of an Intervention Study. American Journal of Obstetrics and Gynecology. 165:6/2 (December 1991):2039-2044; (3) Does Prenatal Breastfeeding Skills Group Education Increase the Effectiveness of a Comprehensive Breastfeeding Promotion Program? Journal of Human Lactation. 12:1 (1996):15-19.	
Study design: Subjects were interviewed during their first visit to the outpatient clinic at 10-15 days postpartum and at 30, 60, 90, 120, 150, and 180 days and at 12 and 18 months.	
Implementing agency: Catholic University	**Project name:** Breastfeeding Promotion Program (BFPP)
Intervention: Among mothers who gave birth at the Clinical Hospital of the Catholic University, 313 mother-child pairs were recruited to serve as controls. The BFPP was then initiated and 422 mother-child pairs were recruited. Five interventions were implemented: training of health providers in breastfeeding; activities at the prenatal clinic; activities at the hospital; changes in hospital policies to allow early breastfeeding and contact with the newborn and provide individual education; and opening of an outpatient breastfeeding support clinic. Intervention mothers attended the lactation clinic at 7-10 days postpartum; the control group received routine postnatal care. A sixth intervention was given to 59 of the 422 mother-child pairs. Mothers in this group received prenatal breastfeeding skills group education in 1-3 20-minute sessions offered in conjunction with prenatal checkups.	
Results/impact: The average time from birth until breastfeeding initiation was 6.7 hours in the control group and 2.8 hours in the intervention group ($p<0.0001$). At 6 months, 32% of the infants in the control group and 67% of those in the intervention group were being exclusively breastfed ($p<0.0001$). Mothers in the intervention group breastfed with higher frequency and for longer periods than those in the control group. Among the 59 women who received the prenatal breastfeeding skills group education, 80% were fully breastfeeding at 6 months postpartum, compared with 65% among mothers who received the five other interventions ($p<0.01$).	
Comments: A subgroup of 94 mothers was visited by a nurse-midwife 2-4 days after hospital discharge; results of this intervention were not reported. Some infants in the intervention group did receive solids, ranging from 1% at 4 months to 13% at 6 months.	
Programmatic implications: This set of interventions was beneficial. The addition of prenatal group education provided additional benefits.	

Behavior(s): Exclusive Breastfeeding		
Country: Chile	**Study site:** Santiago	
Author(s): Valdés, Verónica		**Pub. Date:** 1996
Citation: The Effect of a Breastfeeding Clinical Support Program on the Duration of Exclusive Breastfeeding in Working Women and on Infant's Health and Mother's Satisfaction. Washington, D.C.: Wellstart International, Expanded Promotion of Breastfeeding Program, August 1996.		
Study design: Intervention group had 146 mother-infant pairs; control group had 116 pairs.		
Implementing agency: Catholic University	**Project name:**	
Intervention: Time frame: 1993-95. Low- and middle-class urban women who worked outside of their homes separate from their infants were recruited; all were exclusively breastfeeding at 30 days postpartum. Intervention consisted of counseling and monthly clinical support during the 1st 6 months postpartum. Women were counseled on their individual situation and taught hand expression. Monthly follow-up visits for 6 months plus a visit at 12 months covered maternal and child health and lactation management. Control group received routine pediatric care with follow-up calls monthly for 6 months and at 12 months.		
Results/impact: At 6 months postpartum, 6% of control group and 54% of the intervention group were feeding breastmilk exclusively; 34% of the control group and 8% of the intervention group had weaned their infants.		
Programmatic implications: Individual counseling and monthly clinical support were beneficial. "Time, space, support, and closeness to the infant are important components of work settings." (p. 21).		

Behavior(s): Exclusive Breastfeeding	
Country: Indonesia	**Study site:** Five subdistricts in Yogyakarta, Central Java and South Sumatra with a total population of 225,000 people
Author(s): Manoff International Inc.	**Pub. Date:** 1984
Citation: Manoff International Inc. Nutrition Communication and Behavior Change Component: Indonesian Nutrition Development Program. Washington, D.C.: Manoff International Inc., June 1984.	
Study design: In 11/81, after more than a year of communication activities, the project surveyed households with children under 2; 600 intervention and 400 comparison (control) households were surveyed.	
Implementing agency: MOH	**Project name:** Nutrition Communication and Behavior Change Project
Intervention: During 1977-79 the project selected and trained 2,000 village volunteers and initiated a village weighing program that reached 52,000 children. During 1979-81 the project implemented a comprehensive communication strategy. From 1982 to mid-1983 the project did an evaluation and planning for future expansion. Village volunteers were the major information source for mothers; they used weighing sessions, home visits and community meetings for nutrition education. Action posters and radio minidramas for six feeding behaviors provided supportive messages. Major messages were to: feed infants 0-4 months breastmilk only; breastfeed and give enriched rice porridge 4 times daily to infants 5-8 months; and give adult food 4 times daily to children 9-24 months.	
Results/impact: A higher proportion of infants 5-24 months in the intervention group received the 6 recommended foods (fish, greens, coconut milk, oil, tahu and tempe), compared with those in the comparison group, with one exception (probably due to substitution of another food with equivalent protein). Of the mothers in the intervention group, 57% waited until the 5th month to introduce foods, while 41% in the comparison group did so ($p<0.001$). Women in both groups introduced foods earlier even when they knew that they should wait. At 24 months of age, 40% of the infants in the intervention group were better nourished than the comparison infants. For infants 9-24 months old several knowledge and behavior items were correlated with either weight-for-age or weight-for-height. A World Bank study calculated that the pilot project cost $9.85 annually per child with nutritional status improvement. If the project were expanded to more areas in Indonesia, the cost would be about $5.13 per child.	
Comments: Because radio time was donated rather than paid, the radio dramas did not receive the expected exposure. On the other hand, the village volunteers were highly effective: mothers in the intervention group reported more contact with the village volunteers, including home visits, and more education and personal counseling than those in the comparison group; 88% of mothers in the intervention group received nutrition advice from the village volunteer, compared with 61% in the comparison group.	

Behavior(s): Exclusive Breastfeeding	
Country: Mexico	**Study site:** San Pedro Matir--peri-urban area with 15,000 pop.
Author(s): Morrow, Ardythe L. et al.	**Pub. Date:** 1996
Citation: The Effectiveness of Home-Based Counseling to Promote Exclusive Breastfeeding Among Mexican Mothers. In Wellstart International, Expanded Promotion of Breastfeeding Program (ed.). *Exclusive Breastfeeding Promotion: A Summary of Findings from EPB's Applied Research Program (1992-1996).*July 1996.	
Study design: Comparison of 159 mother-infant pairs randomly assigned to two intervention groups with 3 & 6 home visits & a control group; also compared with an historical cohort of 316 mother-infant pairs from 1988-91. Data on feeding of infants aged 1 day; 2, 4 & 6 weeks; and 2, 3 & 6 months were collected through structured interviews of study mothers.	
Implementing agency: Instituto Nacional de la Nutricion & La Liga de la Leche de Mexico	**Project name:**
Intervention: Study of impact of home visits on exclusive breastfeeding to three months of age. Time frame: 3/95-9/96. Messages: address common maternal concerns. Three local women were trained as peer counselors. Six visits were 2 times during pregnancy, immediately after delivery, and postpartum at 2, 4 & 8 weeks; 3 visits were at end of pregnancy, immediately after delivery, and at 2 weeks postpartum.	
Results/impact: Exclusive breastfeeding from 2 weeks to 3 months was practiced by 7% of control mothers, 33% of those visited three times, and 48% of those visited 6 times ($p<0.05$). Mothers changed from partial to exclusive breastfeeding following counseling, although counseling did not affect infant feeding in the early postnatal period. Home visits increased duration of exclusive breastfeeding.	
Comments: Physician advice had a negative influence on exclusive breastfeeding.	
Programmatic implications: Home visits were beneficial, and 6 visits had more impact than 3 visits.	

Behavior(s): Exclusive Breastfeeding		
Country: Mexico	**Study site:** Low-income communities in Irapuato, Chihuahua, Cuauhtemoc and Jalapa	
Author(s): Rodriguez-Garcia, Rosalia; Kimberly J. Aumack; and Angelica Ramos		**Pub. Date:** 1990
Citation: A Community-Based Approach to the Promotion of Breastfeeding in Mexico. JOGNN. 19:5 (September/October 1990):431-438.		
Study design: FEMAP affiliates in four areas were selected to participate in the study. Jalapa was randomly selected to serve as the control area (N=155); it received no teaching or educational materials. Three other areas — Irapuato (N=160), Chihuahua (N=122), and Cuauhtemoc (N=148) — were the intervention sites. Women aged 15-45 who had a previous live birth were recruited for the study.		
Implementing agency: Federación Mexicana de Asociaciones Privadas de Planificación Familiar (FEMAP)		**Project name:**
Intervention: FEMAP staff were trained in breastfeeding promotion and lactation management. The site program supervisor, who coordinated all breastfeeding promotion activities, trained volunteer health promoters (women living in the community who had previously breastfed). Promoters and supervisors instructed pregnant women in breastfeeding and visited each mother at least twice monthly for the 1st 6 months postpartum to provide additional counseling. The promoters also held group classes in breastfeeding at their homes. Print materials (flyers, pamphlets, posters, flip charts and booklets) were distributed to mothers and promoters.		
Results/impact: 71% of the mothers in the intervention group exclusively breastfed their newborns during the 1st month, compared with 63% of those in the control group. By 5 months postpartum, 14% of the women in the intervention group exclusively breastfed their infants, compared with 15% in the control group. By 6 months postpartum, 9% of the women in the intervention group exclusively breastfed their infants, compared with 3% in the control group.		
Comments: Informal women's support groups were formed as a result of the project.		
Programmatic implications: Peer educators were beneficial in the early months of breastfeeding.		

Behavior(s): Early Initiation, Exclusive Breastfeeding, Continued Breastfeeding	
Country: Mexico	**Study site:** Mexico City
Author(s): Vandale-Toney, Susan et al.	**Pub. Date:** 1992
Citation: Vandale-Toney, Susan et al. Programa de Promoción de la Lactancia Materna en el Hospital General de México: Un Estudio Evaluativo. Salud Pública de México. 34:1 (January-February, 1992):25-35.	
Study design: Prior to the intervention, in October-November 1988, 175 first-time mothers were interviewed to learn about their breastfeeding plans and expectations; these women served as the control group. They were also interviewed at home at one month postpartum (N=95) and at four months postpartum (N=85). The intervention group consisted of 176 first-time mothers who delivered at the hospital during April-June 1989. These women were interviewed at the hospital after delivery, at home at one month postpartum (N=94) and at four months postpartum (N=75). Exclusive breastfeeding was defined as breastmilk with small quantities of water and tea, “a common practice among the large majority of Mexican women.” (p. 32)	
Implementing agency: La Leche League of Mexico and the Mexico City General Hospital, Secretary of Health	**Project name:** Breastfeeding Promotion Program
Intervention: In 1988-89 the Mexico City General Hospital conducted a breastfeeding promotion program with three components: (1) in-service training in lactation management for 110 pediatrics and obstetrics staff members, including physicians, nurses and social workers; (2) changes to improve breastfeeding initiation; and (3) classes for first-time mothers on breastfeeding advantages and techniques. Following training sessions, the hospital changed several policies regarding postnatal care: bottle feeding required a physician’s order; mothers received individual guidance in lactation management; and breastfeeding information replaced materials previously provided by commercial sources.	
Results/impact: The average time between delivery and the first nursing was reduced from 1.6 hours to 1.3 hours. At one month postpartum, 38 percent of the mothers in the intervention group were exclusively breastfeeding, compared with 34.4 percent of those in the control group. However, by the fourth month postpartum, none of the mothers in the intervention group and 2.4 percent of those in the control group were exclusively breastfeeding. First-time mothers in the intervention group breastfed their infants for a median duration of 17 weeks, compared with 12 weeks among those in the control group. The difference in the proportion of infants still being nursed at 16 weeks was statistically significant.	
Comments: None of the findings pertaining to initiation and exclusive breastfeeding was statistically significant. Nevertheless, the intervention did affect duration of breastfeeding. Also, infants in the intervention group were healthier ($p<0.05$) and had more weight gain between 1.4 and 4.5 months ($p<0.001$) than those in the control group.	
Programmatic implications: Changes in hospital practices had some benefits for infant health.	

Behavior(s): Exclusive Breastfeeding		
Country: Nicaragua	**Study site:** Managua	
Author(s): Strachan-Lindenberg, Cathy; Rafael Cabrera Artola; and Vilma Jiménez		**Pub. Date:** 1990
Citation: The Effect of Early Post-Partum Mother-Infant Contact and Breast-feeding Promotion on the Incidence and Continuation of Breast-feeding. International Journal of Nursing Studies. 27 (1990):179-186.		
Study design: Mothers were interviewed in home visits at 1 week & 4 months post-partum, using 24-hour recall.		
Implementing agency: MOH	**Project name:**	
Intervention: Primiparous women delivering at Velez Paiz Hospital, which serves low-income urban residents, were recruited for the study in 1982-83. Subjects recruited during the 1st 3 months of the study were randomly assigned to two groups: (1) the control group (N=123) which had total separation during the normal hospital stay of 12-24 hours, with "usual" breastfeeding promotion; and (2) an experimental group (N=136) with 45 min. mother-infant contact after birth and then separation until discharge plus "standardized" breastfeeding promotion. In the fourth month, a 3rd study group (N=116) was assigned to rooming-in and standardized breastfeeding promotion. "Usual" breastfeeding promotion consisted of routine infant feeding information, which many women missed due to the high volume of deliveries and short hospital stay. "Standardized" breastfeeding promotion consisted of "a series of specific breast-feeding promotion messages." (p. 182).		
Results/impact: At one week postpartum, 63% of the mothers in the rooming-in group, 53% of those in the 45-minute contact group, and 32% of those in the control (complete separation) group were exclusively breastfeeding ($p<0.001$). At 4 months postpartum, there was no statistically significant difference in exclusive breastfeeding among the three groups. However, more mothers in the rooming-in group were partially breastfeeding their infants, compared with the other two groups ($p<0.05$).		
Comments: Most women in the study (82%) initiated breastfeeding, but then weaned their infants by 4 months of age. The rooming-in and promotion had some effect on breastfeeding duration, but other interventions are needed to extend exclusive breastfeeding.		
Programmatic implications: Early mother-infant contact was beneficial at 1 week postpartum but not at 4 months postpartum.		

Behavior(s): Exclusive Breastfeeding		
Country: South Africa	**Study site:** Johannesburg	
Author(s): Hofmeyr, G. Justus et al.		**Pub. Date:** 1991
Citation: Companionship to Modify the Clinical Birth Environment: Effects on Progress and Perceptions of Labour, and Breastfeeding. British Journal of Obstetrics and Gynaecology. 98 (August 1991):756-764.		
Study design: Subjects were interviewed within 24 hours of delivery and during their 6-week post-natal visit.		
Implementing agency: Coronation Hospital and University of the Witwatersrand	**Project name:**	
Intervention: In a community hospital serving a low-income urban population, women about to deliver their 1st child were recruited to participate in a study of the effect of emotional support during labor. The intervention group (N=74) were assigned a “labour companion,” a woman volunteer from the community who provided comfort, reassurance and praise. The volunteers had no health training, did not discuss breastfeeding, and did not visit the subjects in the postnatal wards. The control group (N=75) received the usual obstetrical care.		
Results/impact: At 6 weeks postpartum, 51% of the intervention group were exclusively breastfeeding, compared with 29% of the control group ($p<0.01$). Only 16% of the women in the intervention group reported having feeding problems, compared with 63% in the control group ($p<0.0001$).		
Comments: The authors hypothesize that emotional support during labor helps women to develop the confidence needed to breastfeed successfully.		
Programmatic implications: Emotional support during delivery was beneficial, even though volunteers did not discuss breastfeeding.		

Behavior(s): Early Initiation, Exclusive Breastfeeding		
Country: U.S.A.	**Study site:** Chicago, IL Low-income, minority women	
Author(s): Kistin, Naomi; Rache Abramson; and Peg Dublin.		**Pub. Date:** 1994
Citation: Effect of Peer Counselors on Breastfeeding Initiation, Exclusivity, and Duration among Low-income Urban Women. Journal of Human Lactation. 10:1 (1994):11-15.		
Study design: The study compared breastfeeding practices between 59 women who received support from counselors with 43 women who had requested a counselor but did not receive one due to inadequate numbers of trained counselors.		
Implementing agency: Chicago Breastfeeding Task Force		**Project name:**
Intervention: In 1987 a breastfeeding peer counselor program was established at Cook County Hospital, Chicago's only public hospital, which had 5,500 deliveries in 1989. Volunteer peer counselors were trained in 8 2-hour sessions on breastfeeding management and counseling techniques. Counselors were instructed to talk with clients before delivery, at least twice weekly until breastfeeding was established, every 1-2 weeks for the next 2 months, and then as needed. All subjects planned to breastfeed their infants and had requested a peer counselor.		
Results/impact: At hospital discharge, 93% of the women in the counseling group and 70% of those in the control group had initiated breastfeeding ($p<0.05$); 77% and 40% of these groups, respectively, were exclusively breastfeeding ($p<0.05$). After more than 12 weeks postpartum, 29% of the group with counselors were exclusively breastfeeding, compared with 7% of those with no counselors ($p<0.05$).		
Programmatic implications: Suggested future areas of research are: use of peer counselors in changing women's minds about feeding formula, incremental effects of numbers of contacts, content of interactions, and paid vs. volunteer peer counselors. After training, some peer counselors obtained jobs as health advocates.		

Behavior(s): Exclusive Breastfeeding for First 0-6 Months		
Country: U.S.A.	**Study site:** Flagstaff, AZ	
Author(s): Sciacca, John P. et al.		**Pub. Date:** 1995
Citation: Influences on Breast-feeding by Lower-income Women: An Incentive-based, Partner-supported Educational Program. Journal of the American Dietetic Association. 95 (1995):323-328.		
Study design: Mothers were interviewed at the time of hospital discharge, 2 & 6 weeks post-partum, and 3 months post-partum.		
Implementing agency: Northern Arizona University	**Project name:** Breastfeeding Incentive Program	
Intervention: From March to Dec. 1992, primiparous women attending 2 clinics of the Special Supplemental Food Program for Women, Infants and Children (WIC) were recruited for the study. The control group (N=29) received the usual breastfeeding education: a five-hour prenatal course, promotional materials, a peer support program in which WIC mothers who have successfully breastfed contact new mothers four times, and optional 15-minute breastfeeding group classes. The intervention group (N=26) received all of the control group interventions plus a 2-hour breastfeeding class for the woman and her partner, baby supplies geared to class attendance and contact with the peer breastfeeding promoter, a free breast pump, and prizes raffled to mothers reporting exclusive or partial breastfeeding. Partners were encouraged to participate and received tickets to a football game.		
Results/impact: At the time of hospital discharge, 89% of the intervention group and 55% of the control group were exclusively breastfeeding ($p<0.05$). At 3 months postpartum, 42% of the intervention group and 17% of the control group were exclusively breastfeeding ($p<0.05$).		
Comments: All incentives were donated by businesses in the community. Hospital practices were not reported. Study did not examine the relative impact of partner involvement, extra classes, use of a breast pump, and interest in incentives.		

Behavior(s): Exclusive Breastfeeding		
Country: U.S.A.	**Study site:** Columbus, OH	
Author(s): Wiles, Leslie S.		**Pub. Date:** 1984
Citation: The Effect of Prenatal Breastfeeding Education on Breastfeeding Success and Maternal Perception of the Infant. Journal of Ob/Gyn Nursing. (July/August 1984):253-257.		
Study design: The sample consisted of 40 primiparous women who wanted to breastfeed, attended childbirth education classes, and had an uncomplicated delivery. Subjects took childbirth education classes at a 1000-bed hospital. Subjects were interviewed at 1-2 days postpartum and at one month postpartum.		
Implementing agency: Center for Nursing Research, Ohio State University	**Project name:**	
Intervention: This quasi-experimental study assessed the effect of prenatal breastfeeding education on success in breastfeeding and mothers' perceptions of their infant. Half of the mothers attended a prenatal breastfeeding education class; half served as controls.		
Results/impact: At one month postpartum, 18 (90%) of the experimental subjects were "totally breastfeeding," compared with 6 (30%) of the control subjects. Ten of the control subjects discontinued breastfeeding at one week postpartum; 9 of the 14 control subjects who had discontinued breastfeeding said that their baby was uncooperative. Of the 19 experimental subjects who were breastfeeding, 16 cited the prenatal breastfeeding class as the primary factor contributing to their success, whereas 5 of the 6 control subjects attributed their success to their baby being a good nurser. At one month postpartum mothers in the experimental group had a more positive view of their infant than those in the control group.		
Comments: "Total" breastfeeding was not defined. The small sample size limits the generalizability of this study.		

Behavior(s): Exclusive Breastfeeding	
Country: Brazil	**Study site:** Greater São Paulo
Author(s): Rea, M.F. and E.S. Berquó	**Pub. Date:** 1990
Citation: Impact of the Brazilian National Breast-feeding Programme on Mothers in Greater São Paulo. Bulletin of the World Health Organization. 64:3 (1990):365-371.	
Study design: A baseline survey in Jan.-Feb. 1981 used a sample frame of child health care services to select a random sample of 500 women of all income levels with a child aged 0-12 months. The follow-up 1987 survey used a similar sample of 497 mothers asking about their breastfeeding practices for children born since 1981.	
Implementing agency: MOH	**Project name:** National Food and Nutrition Institute (INAN) & UNICEF, National Breastfeeding Program
Intervention: Brazil conducted a major national breastfeeding campaign from March 1981 to Dec. 1986. Major interventions were: educating health professionals and workers on breastfeeding management, implementing rooming-in, including breastfeeding information in training curricula for health personnel and primary grade teachers, restricting formula distribution, counseling mothers, and supporting extensive mass media campaigns.	
Results/impact: Mean duration of exclusive breastfeeding increased from 43.2 days to 66.6 days between 1981 and 1987. The proportion of children exclusively breastfed increased from 42% in 1981 to 49% in 1987, but this difference was not statistically significant. Although fewer infants under one-month-old were exclusively breastfed after the campaign (74% in 1981, and 53% in 1987), more infants at older ages were exclusively breastfed (of infants 2 months old, 24% in 1981 and 44% in 1987; of those four months old, 4% in 1981 and 39% in 1987; and those six months old, 11 percent in 1981 and 37% in 1987).	
Comments: Improvements in breastfeeding practices were most evident during the intensive part of the campaign during 1982-83.	
Programmatic implications: The combination of interventions did increase the mean duration of exclusive breastfeeding.	

Behavior(s): Exclusive Breastfeeding	
Country: Chile	**Study site:** a government health clinic in Lo Barnechea, a suburb of Santiago with low- and middle-income residents
Author(s): Burkhalter, B.R. and P.S. Marin	**Pub. Date:** 1991
Citation: A Demonstration of Increased Exclusive Breastfeeding in Chile. International Journal of Gynecology and Obstetrics 34 (1991):353-359.	
Study design: "Exclusive" breastfeeding was defined as breastfeeding with no supplements plus breastfeeding supplemented by water taken by cup or spoon (but not by bottle), oral rehydration solution or vitamins. Infants born in the Lo Barnechea service area were studied at three time periods: (1) 137 infants born during 9/73-6/74 before the intervention; (2) 115 infants born during 8/74-12/74 after the intervention began; and (3) 117 infants born during 8/75-1/76, to assess sustainability after the program's founder left. Information on feeding was recorded during monthly visits to the well-baby clinic. In cases of missed visits, information was taken during a subsequent clinic visit or during home visits.	
Implementing agency: International Science and Technology Institute and UNICEF	**Project name:**
Intervention: Promotion of "exclusive" breastfeeding during the 1st 3 months of life included: (1) a series of 4 lectures in the prenatal clinic; (2) infant growth monitoring and counseling of mothers during their monthly postnatal visits; (3) 8 home visits (2 in the 1st 2 months plus 1 per month for the next 4 months) by health staff; (4) counseling on how to continue exclusive breastfeeding and assistance in returning to exclusive breastfeeding; and (5) peer group encouragement.	
Results/impact: At one month postpartum, 85% of the infants in the pre-intervention group were "exclusively" breastfed, compared with 95% of those in the 1st post-intervention group and 87% in the 2nd post-intervention group. By 6 months of age, these proportions fell to 30%, 74% and 61%, respectively. Differences between the pre-intervention and 1st intervention group were significant for infants at all 6 month intervals ($p<0.05$). Differences between the pre-intervention and 2nd intervention group were significant for infants aged 3-6 months ($p<0.01$).	
Comments: The authors stated that the components that had the most impact were: (1) the successful efforts to help mothers return to "exclusive" breastfeeding; (2) home visits by health staff; and (3) peer group encouragement.	
Programmatic implications: The promotional interventions helped mothers sustain "exclusive" breastfeeding longer. One year later, prevalence levels fell after the program's founder left.	

Behavior(s): Exclusive Breastfeeding, Continued Breastfeeding	
Country: Guatemala	**Study site:** 17 low-income, low-literacy, communities surrounding Guatemala City
Author(s): (1) Maryanne Stone-Jiménez and Irma (Mimi) de Maza; (2) Irma Ch. De Maza et al.	**Pub. Date:** 1993, 1997
Citation: (1) Stone-Jiménez, Maryanne, and Irma (Mimi) de Maza. "Mother-to-Mother Support Groups: The Periurban Model. In The Proceedings of an International Conference on Communication Strategies to Support Infant and Young Child Nutrition. Edited by Peggy Koniz-Booher. Cornell International Nutrition Monograph Series Numbers 24 and 25, 1993, p. 103-115; (2) Maza, Irma Ch. de et al. Sustainability of a Community-based Mother-to-Mother Support Project in the Peri-urban Areas of Guatemala City: A La Leche League Study. Arlington, VA: BASICS, 1997.	
Study design: Data on breastfeeding of about 250 infants were collected in 1990, at the start of the intervention. In 1992 a follow-up survey of about 250 infants was done after the intervention had been implemented for two years. A follow-up study was done in 1996 to assess the project's sustainability since external funding had ended in 1992. The study consisted of: (1) a household survey of 501 women living in El Limón, a community in the project area; (2) structured interviews with 102 of the original breastfeeding counselors; and (3) a review of the project's administrative and financial records.	
Implementing agency: La Leche League, Guatemala	**Project name:** Child Survival/La Leche League Project
Intervention: The Child Survival/La Leche League Project (1988-1992) conducted a community assessment, developed support groups, and designed and implemented the La Leche League model, providing mother to mother breastfeeding support. The project identified and trained 212 volunteer breastfeeding advocates from 17 communities and formed mother support groups in the targeted communities. Groups were established in churches, health centers, clinics or an advocate's home. The project also established a health information system to record meeting attendance and record breastfeeding counseling sessions and other contacts, and number of referrals to other child survival services in the community. The educational materials provided by the project were: a training reference manual that summarizes the 24 hour breastfeeding course and 12 cloth posters. The total project cost was $190,000. In 1992, just before the grant funding ended, the project had an annual budget of $50,000, which mostly supported supervisory staff. Maintaining the project with local funds costs about $20,000 per year, or about $13.40 to $18.60 per woman covered.	
Results/impact: In Santa Fe/La Libertad, exclusive breastfeeding for infants under 4 months increased from 15.7% in 1990 to 22.2% in 1992, and from 10.1% to 17.7% for infants under 6 months. The proportion of children between 20-24 months who were still breastfeeding rose from 25.0% to 28.4%. The 1996 sustainability study found that 84% of the original breastfeeding counselors had provided counseling in the previous 3 months, 58% had made a home visit, and 71% had made a clinic referral. In the previous year, 40% had held a support group meeting. Eighty of the breastfeeding counselors were spending 4.2 hours weekly providing breastfeeding support services. According to the 1996 household survey, abut 25% of all women of childbearing age were in contact with a breastfeeding counselor.	
Comments: The report of the original intervention did not indicate data source or provide statistical significance data.	

Programmatic implications: The project was able to continue on a reduced budget by decentralizing and placing more responsibility at the community level. Activities continue due to the high level of motivation of the breastfeeding counselors and their warm relationship with the national La Leche League staff. La Leche League holds an annual workshop and mini-workshops monthly at its office and refresher courses in the communities. By simplifying the reporting system, the project motivated more nonreporting breastfeeding counselors to record their activities.

Behavior(s): Exclusive Breastfeeding		
Country: Honduras	**Study site:** National	
Author(s): (1) Nutrition Communication Project; (2) Orlando Hernandez; Lani Marquez, and Margaret Parlato		**Pub. Date:** (1) 1995; (2) 1995
Citation: (1) Nutrition Communication Project. Honduras National Breastfeeding Promotion Project: 1989-1993. Washington, D.C.: Academy for Educational Development (AED), 1995a; (2) Orlando Hernandez; Lani Marquez, and Margaret Parlato. Assessment of the Impact of a National Intervention to Promote Exclusive Breastfeeding in Honduras. Washington, D.C.: AED, 1995.		
Study design: Baseline survey of 706 mothers and 446 health care providers in three health regions; and follow-up surveys of 554 mothers and 419 health care providers in 2 health regions.		
Implementing agency: MOH	**Project name:** Nutrition Communication Project	
Intervention: During 10/89-8/93, the MOH conducted a 21-month breastfeeding campaign directed to mothers, health workers, and other community members. The major message was: For the first 6 months of life, mother's milk and nothing else. The MOH produced: a poster, poster/calendar, 2 flip charts, mini-reference guide for health workers, comic book, and radio spots. A radio call-in show and theater group performances also featured campaign messages. The MOH trained national and regional trainers in breastfeeding promotion; they in turn trained MOH physicians, nurses, community health promoters and midwives. About 1,200 health workers were trained on the government's new norm to promote exclusive breastfeeding through 6 months. Total cost: $796,249.		
Results/impact: In the 2 regions studied, at least 59% of mothers saw a poster or other print material; 44% heard the radio spots. However, only 23%-41% heard about breastfeeding from a health worker. The prevalence of exclusive breastfeeding increased at all ages: at 1 month of age from 48% to 70%; 4 months from 24% to 31%; and 6 months from 7% to 12%.		
Comments: The quality of training varied by area; coverage was lower than expected. Although access to health facilities was good (80%) of mothers said they had received prenatal care at MOH facilities), most women did not receive information about breastfeeding from a health worker.		
Programmatic implications: The mass media campaign and training of health workers were beneficial.		

Behavior(s): Early Initiation, Exclusive Breastfeeding, Continued Breastfeeding	
Country: Honduras	**Study site:** Phase 1: Tegucigalpa & San Pedro Sula; Phase 2: national
Author(s): (1) Popkin, Barry M. et al.; (2) Not stated; (3) Huffman, Sandra L. et al.	**Pub. Date:** 1991, 1987, 1991
Citation: (1) An Evaluation of a National Breast-Feeding Promotion Programme in Honduras. Journal of Biosocial Science. 23 (1991):5-21; (2) "Breastfeeding Promotion in Honduras: The PROALMA Project." Mothers and Children. 6:1 (1987):1-4; (3) Breastfeeding Promotion in Central America: High Impact at Low Cost. Washington, D.C.: Academy for Educational Development, Nutrition Communication Project, 1991.	
Study design: In the 1st phase of the project, PROALMA conducted three baseline surveys in 1982 in 19 low-income communities in Tegucigalpa; these surveys consisted of 868 women community residents, 344 health professionals and 449 postpartum women. In 1985 follow-up surveys were conducted in the same communities of 521 women residents, 166 health professionals and 166 postpartum women. In the 2nd phase of the project, 251 postpartum mothers delivering at 13 regional and area hospitals were interviewed in 1986. A follow-up survey in 1988 interviewed 30 mothers in each of the same 13 hospitals plus 2 other area hospitals and 3 hospitals covered in PROALMA I. In 1986 (N=901) and 1988 (N=1,020), the project interviewed mothers of infants under 1 in 5 cities. In 1988 four nurses made site visits to 18 hospitals to evaluate hospital practices.	
Implementing agency: Ministry of Public Health, National Social Security Institute, & National Social Welfare Agency	**Project name:** PROALMA project
Intervention: The PROCOMSI project, which promoted breastfeeding in two urban areas served by two hospitals and a health center, broadcast radio spots on breastfeeding during Mar.-June 1981 and supported more intensive radio broadcasts during 11/82-3/83, with a radio course, spots, and song on breastfeeding; PROCOMSI also held 2 seminars for medical personnel. These activities paved the way for PROALMA's work. The 1st phase of the PROALMA project (7/83-12/85) sought to change infant feeding norms in three major urban hospitals and a health center. Project staff trained health professionals in breastfeeding techniques; 80% of those surveyed reported receiving some formal training from PROALMA. Prior to the project, mothers were separated from their infants for 3-6 hours during the day and all night. Changes in hospital practices included elimination of routine distribution of formula, postpartum initiation of breastfeeding, and rooming-in. PROALMA staff made daily visits to counsel new mothers in hospital. They also made more than 100 home visits to treat specific breastfeeding problems. Six public health clinics in Tegucigalpa provided lactation management services. PROALMA I cost $365,000 for the 2 ½ year project. During this period the project saved an estimated $199,000 in reduced purchases of infant formula, bottles and drugs. The 2nd phase of the PROALMA project (1/86- early 1989) expanded breastfeeding promotion activities to cover an additional 14 regional and area hospitals. Training workshops were held for 3,800 health professionals and 5,900 community leaders. In the 1986 survey of health professionals, 62% said they had received training in breastfeeding. Three pamphlets, a poster and a calendar were produced and distributed to mothers and health workers. More than 14,000 educational talks attended by 125,000 community members were conducted. The 3-year PROALMA II project cost $817,000.	

Results/impact: Between 1982 and 1985, the proportion of urban health professionals recommending that women initiate breastfeeding at birth increased from 27% to 87% ($p<0.01$). In 1982 none of the women initiated breastfeeding during the 1st hour after birth; in 1985 more than 50% of the mothers did in 2 of the 3 hospitals. The Maternal and Child Hospital in Tegucigalpa saved an estimated $14,500 annually due to decreased use of formula, bottles and drugs. Duration of exclusive breastfeeding increased: in 1982, 65% of breastfeeding women in low-income areas of Tegucigalpa introduced some form of supplementation during the first month; in 1985 only 40% did so. National surveys (DHS) found that median duration of breastfeeding among urban women increased from about 4 months in 1981 to 9 months in 1984 and 10 months in 1987. The surveys done in 19 low-income communities of Tegucigalpa found that the proportion of infants breastfed at 6 months increased from 45% in 1982 to 72% in 1985.

Comments: Report did not state the length of hospital stay or extent of rooming-in.

Programmatic implications: The project reached a large proportion of health professionals, which helped to institutionalize the new practices. Fewer changes in breastfeeding behaviors were observed between 1984 and 1987. After the 6-year project, only about half of the 18 hospitals studied had adopted the 10 hospital routines supportive of breastfeeding. This finding suggests that institutionalization of new norms requires additional effort.

Behavior(s): Exclusive Breastfeeding		
Country: India	**Study site:** Sion Hospital, located in the slums of Bombay	
Author(s): Wellstart International		**Pub. Date:** 1998
Citation: India: How One Hospital's Work to Change Breastfeeding Trends Expanded Beyond State Borders. Country Case Study No. 5. San Diego, CA: Wellstart International, 1998.		
Study design: A 1980 study examined breastfeeding of infants born at Sion Hospital for 6 months postpartum. A follow-up study was conducted in 1990. Sampling method and sample size were not reported.		
Implementing agency: Sion Hospital	**Project name:**	
Intervention: Following a 1980 study that revealed a high rate of bottlefeeding and supplementation with breastmilk substitutes, Sion Hospital changed its policies: formula & bottles were banned, sick or premature babies were fed with a spoon, only human milk was used, staff were trained, and rooming-in and a Human Milk Bank were established.		
Results/impact: A decade after the changes in hospital policy, formula and bottlefeeding in the 1st 6 months of life had declined considerably; infants had fewer infections, there was no gastroenteritis in the postnatal ward, and sick babies were discharged earlier. In 1980 97% of infants delivered at the hospital were exclusively breastfed at birth, 74% at 3 months, and 45% at 6 months. In 1990 100% of infants were exclusively breastfed at birth, 95% at 3 months, and 88% at 6 months.		
Comments: This initiative led to establishment of the Infant Feeding Project in 1991. The Project conducted a "training for trainers" workshop for health care professionals in the city's 3 medical colleges. These trainers have done training in 12 general hospitals and 24 maternity homes. In 1993 Sion Hospital was one of the 1st hospitals in India to be designated "Baby Friendly." Following assistance from the Project, 33 hospitals in Bombay were designated "Baby Friendly."		
Programmatic implications: The changes in hospital policy were beneficial.		

Behavior(s): Exclusive Breastfeeding	
Country: Mexico	**Study site:** 39 child health posts in Mexico City and 9 in Veracruz Norte
Author(s): Instituto Mexicano del Seguro Social (IMSS)	**Pub. Date:** [no date]
Citation: Lactancia Materna: Una estrategia de Salud Reproductiva. Mexico City: IMSS, Population Council and UNICEF, p. 83-104.	
Study design: Data on breastfeeding of infants up to 6 months old was collected in 1991, before the Baby Friendly initiative, in 1993, after the Baby Friendly initiative, and in 1995 after breastfeeding promotion had been implemented in child health posts.	
Implementing agency: IMSS	**Project name:**
Intervention: In 1991, the Mexican Ministry of Health decided to implement the Baby- and Mother-Friendly Hospital Initiative (BMFHI) on a national basis. That same year the National Council of Infant Formula Manufacturers agreed to stop giving infant formula samples to public and private hospitals. The BMFHI promoted the Ten Steps for Successful Breastfeeding and 15 additional actions for hospitals to be certified as Baby Friendly. Other actions include: extensive training of health workers, distribution of community education materials, follow-up by health professionals working in hospitals, and creation of mothers' support groups. The IMSS established a system for postnatal follow-up by linking primary health care posts with child care facilities, or "guarderías."	
Results/impact: The prevalence of exclusive breastfeeding among newborns has risen from 44% in 1991 to 48% in 1993 and 74% in 1995. Median duration increased from 0.6 months in 1991, to 1.0 months in 1993 and 1.1 months in 1995.	
Comments: Data on sample size and sampling methodology were not given. The study found that only half of the newborns initially exclusively breastfed were still being exclusively breastfed by 2 months of age. It did not compare dropout rates between areas with differing interventions.	
Programmatic implications: Changing hospital policies and other actions can increase the incidence of exclusive breastfeeding among newborns.	

Behavior(s): Early Initiation, Exclusive Breastfeeding		
Country: Panama	**Study site:** Coclé region, which has 141,000 residents and is 75% rural	
Author(s): Huffman, Sandra L.		**Pub. Date:** 1991
Citation: A Historical Review of the Panama Breastfeeding Promotion Project. Washington, D.C.: Academy for Educational Development, 1991.		
Study design: A random sample of clinic records of one-third of all infants aged 2-4 months who attended a well-child clinic at Penonome Hospital, a regional hospital with less than 1,000 births annually (sample size not reported).		
Implementing agency: Coclé Regional Commission	**Project name:** Panama Breastfeeding Promotion Project	
Intervention: Between 1984 and 1986, the Coclé MOH regional office trained more than 2,000 health workers in breastfeeding; more than 5,000 people attended training seminars. Before the project, the Penonome Hospital gave newborns nothing after delivery for 4 hours and then gave dextrose water and formula until discharge 24 hours after delivery. In 1984, it stopped giving water and formula, changed to rooming-in for vaginal deliveries, and reduced mother-infant separation to ½ hour (daytime) to 3 hours (nighttime).		
Results/impact: The proportion of infants aged 2-4 months being exclusively breastfed increased from 30% in 1984 to 57% in 1986. The number of 2-oz. bottles prepared for newborns at Penonome Hospital fell from 5,855 in 1984 to 1,750 in 1986. Thus the hospital saved $800-1,250 per year.		

Behavior(s): Exclusive Breastfeeding	
Country: Peru	**Study site:** Nine low-income communities in Lima, including Santa Maria
Author(s): (1) Creed-Kanashiro, Hilary; Mary Fukumoto; and Maria Elena Ugaz; (2) Creed-Kanashiro, Hilary; Mary Fukumoto; and Maria Elena Ugaz	**Pub. Date:** (1) 1994; (2) 1995
Citation: (1)A Community Intervention to Improve Infant Feeding Practices related to Diarrhoeal Disease and Growth, and the Evaluation of the Changes in Behaviour. Final Report. Lima, Peru: Instituto de Investigacion Nutricional, 1994; (2) A Community Intervention to Improve Infant Feeding Practices in Peru: Secondary Analysis and Dissemination for Application to Programs. Lima, Peru: Instituto de Investigacion Nutricional, September 1995.	
Study design: Study used pre- and post-test survey of mothers in the community, 24-hour recall, structured observation, and weighing of child. Post-evaluation covered 142 infants under 5 months and 155 aged 5-12 months.	
Implementing agency: Instituto de Investigacion Nutricional	**Project name:**
Intervention: This community-based intervention during 3/91-1/93 provided short courses to women on lactation and weaning, attended by 243 and 222 people, respectively. The courses used videos & weaning food demonstrations. Project also used posters, spots on loud speakers, booklets on breastfeeding and weaning food recipes, & radio.	
Results/impact: More than 98% of mothers were exposed to the campaign; 80% recalled the posters, 55% heard the speakers spots, and 29% received the breastfeeding booklet and attended the courses. The prevalence of exclusive breastfeeding among children 0-4 months increased from 33% to 43% (not significant). The proportion of mothers introducing liquids by 6 months of age decreased from 93% to 84%. The project achieved a delay in introduction of foods: the proportion of infants who had received foods by 3 months fell from 33% to 16% ($p<0.001$); by 5 months, from 54% to 37% ($p<0.001$). The proportion of infants 6-12 months who received breastmilk plus 2 portions of energy-dense food increased from 15% to 28% ($p<0.01$).	
Comments: An increase in exclusive breastfeeding in the 1st month was not observed, although it was found in a hospital-based intervention.	
Programmatic implications: The major benefit of the community campaign was to delay introduction of liquids and foods.	

Behavior(s): Exclusive Breastfeeding	
Country: Norway	**Study site:** Urban hospital in Oslo
Author(s): Nylander, Gro et al.	**Pub. Date:** 1991
Citation: Unsupplemented Breastfeeding in the Maternity Ward: Positive Long-Term Effects. Acta Obstetrics and Gynecology Scandinavia. 70 (1991):205-209.	
Study design: Information on infant feeding was collected at the hospital and in a follow-up survey after 1 year. In the follow-up survey, nurses of local child health care centers were asked to complete the questionnaire. The response rates for the intervention and control groups were 62% and 52%, respectively.	
Implementing agency: Ullevaal Hospital	**Project name:**
Intervention: In 1985 the Ullevaal Hospital changed its practices regarding infant feeding. Before the change, information was collected for 204 mother-infant pairs, who served as the control group. These newborns received supplementary feedings of sucrose solution for the 1st 3 days, followed by formula. After the change to early, frequent and unsupplemented breastfeeding, 203 mother-infant pairs were studied. The 1st nursing took place within 30 minutes of birth.	
Results/impact: At 1 ½, 3 and 6 months of age, 93%, 75% and 22%, respectively, of the infants in the intervention group were exclusively breastfed, compared with 76%, 57% and 12% of those in the control group ($p<0.001$ at 1 ½ and 3 months, $p<0.01$ at 6 months). The mean duration of exclusive breastfeeding was 4.5 months in the intervention group, compared with 3.5 months in the control group ($p<0.001$). Breastfeeding with supplemental feeding continued for an average of 8.0 and 6.9 months for the intervention and control groups, respectively ($p<0.01$).	
Comments: Relying on clinic staff to complete questionnaires led to a high attrition rate.	
Programmatic implications: Changes in hospital practices appear to be beneficial, although post-delivery factors were not studied.	

Section IV

Continued Breastfeeding

Behavior 4. Continued Breastfeeding

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Comm-unity Educ.**	**Post-partum Clinics**	**Page #**
Salariya et al., 1978	U.K.	A		/								95
Vandale-Toney et al., 1992	Mexico	B		/	/							96
Stone-Jiménez & de Maza, 1993	Guatemala	C				/		/				97
Popkin et al., 1991	Honduras	C		/	/				/			99
Bradley & Meme, 1992	Kenya	C		/	/							101
Saunders & Carroll, 1988	U.S.A.	C		/				/				102

Behavior(s): Continued Breastfeeding		
Country: U.K.	**Study site:** Dundee, Scotland	
Author(s): Salariya, E.M.; P.M. Easton; and J.I. Cater		**Pub. Date:** 1978
Citation: Duration of Breast-feeding after Early Initiation and Frequent Feeding. Lancet. November 25, 1978:1141-1143.		
Study design: Hospital feed charts were used to determine the time of lactation. Subjects were sent follow-up letters at 6, 12 & 18 weeks postpartum to determine whether they were still breastfeeding and when they had weaned their infant.		
Implementing agency: Ninewells Hospital & University of Dundee	**Project name:**	
Intervention: This study examined the effect of early initiation and increased frequency of breastfeeding on duration. A sample of 111 primiparous women who had chosen to breastfeed were assigned to four groups: two groups had the baby put to breast within 10 minutes of delivery (early initiation) and the other two began breastfeeding 4-6 hours after delivery (later initiation). One of each pair of groups fed every 2 hours; the other at 4 hour intervals.		
Results/impact: Mothers feeding every 2 hours began lactating at least 24 hours sooner than those feeding every 4 hours. Both early initiation and increased frequency extended the nursing period. The early initiation group that breastfed every 2 hours breastfed for an average (median) of 182 days, compared with 140 days among the early initiation/4-hour breastfeeding group, 112 among the later initiation/2-hour breastfeeding group, and 77 days among the later initiation/4-hour breastfeeding group.		
Comments: Mothers fed on demand after lactation was established. Infants were fed “during waking hours only.” Those awakening in the night were given water. Data on exclusive breastfeeding were not collected.		
Programmatic implications: Early initiation and frequent feeding did lead to longer breastfeeding.		

Behavior(s): Early Initiation, Exclusive Breastfeeding, Continued Breastfeeding	
Country: Mexico	**Study site:** Mexico City
Author(s): Vandale-Toney, Susan et al.	**Pub. Date:** 1992
Citation: Vandale-Toney, Susan et al. Programa de Promoción de la Lactancia Materna en el Hospital General de México: Un Estudio Evaluativo. Salud Pública de México. 34:1 (January-February, 1992):25-35.	
Study design: Prior to the intervention, in October-November 1988, 175 first-time mothers were interviewed to learn about their breastfeeding plans and expectations; these women served as the control group. They were also interviewed at home at one month postpartum (N=95) and at four months postpartum (N=85). The intervention group consisted of 176 first-time mothers who delivered at the hospital during April-June 1989. These women were interviewed at the hospital after delivery, at home at one month postpartum (N=94) and at four months postpartum (N=75). Exclusive breastfeeding was defined as breastmilk with small quantities of water and tea, “a common practice among the large majority of Mexican women.” (p. 32)	
Implementing agency: La Leche League of Mexico and the Mexico City General Hospital, Secretary of Health	**Project name:** Breastfeeding Promotion Program
Intervention: In 1988-89 the Mexico City General Hospital conducted a breastfeeding promotion program with three components: (1) in-service training in lactation management for 110 pediatrics and obstetrics staff members, including physicians, nurses and social workers; (2) changes to improve breastfeeding initiation; and (3) classes for first-time mothers on breastfeeding advantages and techniques. Following training sessions, the hospital changed several policies regarding postnatal care: bottle feeding required a physician’s order; mothers received individual guidance in lactation management; and breastfeeding information replaced materials previously provided by commercial sources.	
Results/impact: The average time between delivery and the first nursing was reduced from 1.6 hours to 1.3 hours. At one month postpartum, 38 percent of the mothers in the intervention group were exclusively breastfeeding, compared with 34.4 percent of those in the control group. However, by the fourth month postpartum, none of the mothers in the intervention group and 2.4 percent of those in the control group were exclusively breastfeeding. First-time mothers in the intervention group breastfed their infants for a median duration of 17 weeks, compared with 12 weeks among those in the control group. The difference in the proportion of infants still being nursed at 16 weeks was statistically significant.	
Comments: None of the findings pertaining to initiation and exclusive breastfeeding was statistically significant. Nevertheless, the intervention did affect duration of breastfeeding. Also, infants in the intervention group were healthier ($p<0.05$) and had more weight gain between 1.4 and 4.5 months ($p<0.001$) than those in the control group.	
Programmatic implications: Changes in hospital practices had some benefits for infant health.	

Behavior(s): Exclusive Breastfeeding, Continued Breastfeeding	
Country: Guatemala	**Study site:** 17 low-income, low-literacy, communities surrounding Guatemala City
Author(s): (1) Maryanne Stone-Jiménez and Irma (Mimi) de Maza; (2) Irma Ch. De Maza et al.	**Pub. Date:** 1993, 1997
Citation: (1) Stone-Jiménez, Maryanne, and Irma (Mimi) de Maza. "Mother-to-Mother Support Groups: The Periurban Model. In The Proceedings of an International Conference on Communication Strategies to Support Infant and Young Child Nutrition. Edited by Peggy Koniz-Booher. Cornell International Nutrition Monograph Series Numbers 24 and 25, 1993, p. 103-115; (2) Maza, Irma Ch. de et al. Sustainability of a Community-based Mother-to-Mother Support Project in the Peri-urban Areas of Guatemala City: A La Leche League Study. Arlington, VA: BASICS, 1997.	
Study design: Data on breastfeeding of about 250 infants were collected in 1990, at the start of the intervention. In 1992 a follow-up survey of about 250 infants was done after the intervention had been implemented for two years. A follow-up study was done in 1996 to assess the project's sustainability since external funding had ended in 1992. The study consisted of: (1) a household survey of 501 women living in El Limón, a community in the project area; (2) structured interviews with 102 of the original breastfeeding counselors; and (3) a review of the project's administrative and financial records.	
Implementing agency: La Leche League, Guatemala	**Project name:** Child Survival/La Leche League Project
Intervention: The Child Survival/La Leche League Project (1988-1992) conducted a community assessment, developed support groups, and designed and implemented the La Leche League model, providing mother to mother breastfeeding support. The project identified and trained 212 volunteer breastfeeding advocates from 17 communities and formed mother support groups in the targeted communities. Groups were established in churches, health centers, clinics or an advocate's home. The project also established a health information system to record meeting attendance and record breastfeeding counseling sessions and other contacts, and number of referrals to other child survival services in the community. The educational materials provided by the project were: a training reference manual that summarizes the 24 hour breastfeeding course and 12 cloth posters. The total project cost was $190,000. In 1992, just before the grant funding ended, the project had an annual budget of $50,000, which mostly supported supervisory staff. Maintaining the project with local funds costs about $20,000 per year, or about $13.40 to $18.60 per woman covered.	
Results/impact: In Santa Fe/La Libertad, exclusive breastfeeding for infants under 4 months increased from 15.7% in 1990 to 22.2% in 1992, and from 10.1% to 17.7% for infants under 6 months. The proportion of children between 20-24 months who were still breastfeeding rose from 25.0% to 28.4%. The 1996 sustainability study found that 84% of the original breastfeeding counselors had provided counseling in the previous 3 months, 58% had made a home visit, and 71% had made a clinic referral. In the previous year, 40% had held a support group meeting. Eighty of the breastfeeding counselors were spending 4.2 hours weekly providing breastfeeding support services. According to the 1996 household survey, abut 25% of all women of childbearing age were in contact with a breastfeeding counselor.	
Comments: The report of the original intervention did not indicate data source or provide statistical significance data.	

Programmatic implications: The project was able to continue on a reduced budget by decentralizing and placing more responsibility at the community level. Activities continue due to the high level of motivation of the breastfeeding counselors and their warm relationship with the national La Leche League staff. La Leche League holds an annual workshop and mini-workshops monthly at its office and refresher courses in the communities. By simplifying the reporting system, the project motivated more nonreporting breastfeeding counselors to record their activities.

Behavior(s): Early Initiation, Exclusive Breastfeeding, Continued Breastfeeding	
Country: Honduras	**Study site:** Phase 1: Tegucigalpa & San Pedro Sula; Phase 2: national
Author(s): (1) Popkin, Barry M. et al.; (2) Not stated; (3) Huffman, Sandra L. et al.	**Pub. Date:** 1991, 1987, 1991
Citation: (1) An Evaluation of a National Breast-Feeding Promotion Programme in Honduras. Journal of Biosocial Science. 23 (1991):5-21; (2) "Breastfeeding Promotion in Honduras: The PROALMA Project." Mothers and Children. 6:1 (1987):1-4; (3) Breastfeeding Promotion in Central America: High Impact at Low Cost. Washington, D.C.: Academy for Educational Development, Nutrition Communication Project, 1991.	
Study design: In the 1st phase of the project, PROALMA conducted three baseline surveys in 1982 in 19 low-income communities in Tegucigalpa; these surveys consisted of 868 women community residents, 344 health professionals and 449 postpartum women. In 1985 follow-up surveys were conducted in the same communities of 521 women residents, 166 health professionals and 166 postpartum women. In the 2nd phase of the project, 251 postpartum mothers delivering at 13 regional and area hospitals were interviewed in 1986. A follow-up survey in 1988 interviewed 30 mothers in each of the same 13 hospitals plus 2 other area hospitals and 3 hospitals covered in PROALMA I. In 1986 (N=901) and 1988 (N=1,020), the project interviewed mothers of infants under 1 in 5 cities. In 1988 four nurses made site visits to 18 hospitals to evaluate hospital practices.	
Implementing agency: Ministry of Public Health, National Social Security Institute, & National Social Welfare Agency	**Project name:** PROALMA project
Intervention: The PROCOMSI project, which promoted breastfeeding in two urban areas served by two hospitals and a health center, broadcast radio spots on breastfeeding during Mar.-June 1981 and supported more intensive radio broadcasts during 11/82-3/83, with a radio course, spots, and song on breastfeeding; PROCOMSI also held 2 seminars for medical personnel. These activities paved the way for PROALMA's work. The 1st phase of the PROALMA project (7/83-12/85) sought to change infant feeding norms in three major urban hospitals and a health center. Project staff trained health professionals in breastfeeding techniques; 80% of those surveyed reported receiving some formal training from PROALMA. Prior to the project, mothers were separated from their infants for 3-6 hours during the day and all night. Changes in hospital practices included elimination of routine distribution of formula, postpartum initiation of breastfeeding, and rooming-in. PROALMA staff made daily visits to counsel new mothers in hospital. They also made more than 100 home visits to treat specific breastfeeding problems. Six public health clinics in Tegucigalpa provided lactation management services. PROALMA I cost $365,000 for the 2 ½ year project. During this period the project saved an estimated $199,000 in reduced purchases of infant formula, bottles and drugs. The 2nd phase of the PROALMA project (1/86- early 1989) expanded breastfeeding promotion activities to cover an additional 14 regional and area hospitals. Training workshops were held for 3,800 health professionals and 5,900 community leaders. In the 1986 survey of health professionals, 62% said they had received training in breastfeeding. Three pamphlets, a poster and a calendar were produced and distributed to mothers and health workers. More than 14,000 educational talks attended by 125,000 community members were conducted. The 3-year PROALMA II project cost $817,000.	

Results/impact: Between 1982 and 1985, the proportion of urban health professionals recommending that women initiate breastfeeding at birth increased from 27% to 87% ($p<0.01$). In 1982 none of the women initiated breastfeeding during the 1st hour after birth; in 1985 more than 50% of the mothers did in 2 of the 3 hospitals. The Maternal and Child Hospital in Tegucigalpa saved an estimated $14,500 annually due to decreased use of formula, bottles and drugs. Duration of exclusive breastfeeding increased: in 1982, 65% of breastfeeding women in low-income areas of Tegucigalpa introduced some form of supplementation during the first month; in 1985 only 40% did so. National surveys (DHS) found that median duration of breastfeeding among urban women increased from about 4 months in 1981 to 9 months in 1984 and 10 months in 1987. The surveys done in 19 low-income communities of Tegucigalpa found that the proportion of infants breastfed at 6 months increased from 45% in 1982 to 72% in 1985.

Comments: Report did not state the length of hospital stay or extent of rooming-in.

Programmatic implications: The project reached a large proportion of health professionals, which helped to institutionalize the new practices. Fewer changes in breastfeeding behaviors were observed between 1984 and 1987. After the 6-year project, only about half of the 18 hospitals studied had adopted the 10 hospital routines supportive of breastfeeding. This finding suggests that institutionalization of new norms requires additional effort.

Behavior(s): Early Initiation, Feeding Colostrum, Continued Breastfeeding	
Country: Kenya	**Study site:** 58 hospitals nationwide
Author(s): Bradley, Janet E., and Joyce Meme	**Pub. Date:** 1992
Citation: Breastfeeding Promotion in Kenya: Changes in Health Worker Knowledge, Attitudes and Practices, 1982-89. Journal of Tropical Pediatrics. 38 (October 1992):228-233.	
Study design: The 1982 KAP survey of 195 health workers was used as a baseline. In 1989 the MOH interviewed 109 hospital policy-makers and senior staff and 175 maternity ward staff in 58 hospitals nationwide. These hospitals consisted of 41 government facilities and 17 private or religious facilities. The researchers report that the 1982 and 1989 surveys used similar samples, which were based on purposive selection of facilities and purposive and random sampling of subjects.	
Implementing agency: Ministry of Health	**Project name:**
Intervention: Following a 1982 KAP survey of health workers, the MOH implemented a breastfeeding promotion program: it adopted a Code of Marketing of Breastmilk Substitutes; it issued directives to all hospitals to stop distributing infant formula and giving routine prelacteal feedings and begin promoting early breastfeeding, full rooming-in; it appointed a national breastfeeding officer to organize training of more than 800 health workers in breastfeeding promotion and lactation management.	
Results/impact: Hospital policy-makers and maternity ward staff were more knowledgeable about breastfeeding in 1989 than in 1982. Practices improved dramatically. The proportion of health workers reporting that babies were put on the breast within one hour of birth increased from 14% in 1982 to 61% in 1989. The practice of giving prelacteal feeds declined from 93% of the health workers in 1982 to 48% in 1989. Routine use of infant formula declined from 54% in 1982 to 3% in 1989. The proportion of health workers advocating introduction of semi-solid food after 6 months increased from 13% in 1982 to 31% in 1989. Average duration of breastfeeding has increased from a mean of less than 14 months in 1979 to 19.4 months in 1989.	
Comments: The direct impact of the policy changes and training on breastfeeding practices is difficult to assess.	
Programmatic implications: Health workers who received training often did not improve practices in maternity wards. Training of policy-makers may not be productive, since “they do not generally see themselves in charge of maternity ward policy.” The non-availability of infant formula had an influence on changing hospital practices. Government directives were not widely read by health workers. If read, they were not understood.	

Behavior(s): Continued Breastfeeding	
Country: U.S.A.	**Study site:** rural New Mexico
Author(s): Saunders, Stephen E., and Julie Carroll	**Pub. Date:** 1988
Citation: Post-partum Breast Feeding Support: Impact on Duration. Journal of the American Dietetic Association. 88 (February 1998):213-215.	
Study design: Low-income, predominantly Hispanic women who receive subsidized food were enrolled in the study. The historical control group (N=75) was comprised of women who delivered at the local hospital during a 15-month period and who breastfed during their hospital stay. The intervention group (N=80) consisted of women who delivered at the same hospital during the subsequent 16 months and who breastfed during their hospital stay. The study was designed to determine the impact of breastfeeding counseling and support during the 1st two weeks postpartum on breastfeeding duration.	
Implementing agency: Arizona Department of Health Services and New Mexico Health and Environment Department	**Project name:**
Intervention: Mothers were exposed to one or more of 3 interventions: (1) a hospital visit 1-3 days postpartum to discuss breastfeeding; (2) a telephone call or letter 4-5 days postpartum; and (3) a structured group support class at 2 weeks postpartum, including a slide/tape show and a discussion of common breastfeeding problems.	
Results/impact: The proportion of mothers in the control group who were breastfeeding dropped to 71% at 4 weeks postpartum and 47% at 16 weeks. Among women who received 1-3 interventions, the proportion breastfeeding fell to 80% at 4 weeks postpartum and 50% at 16 weeks. Among women who received all three interventions, the proportion breastfeeding declined to 95% at 4 weeks postpartum and 67% at 16 weeks ($p<0.001$ to 0.05).	
Comments: Study findings relied on mothers' reports of breastfeeding. Study did not define extent of breastfeeding.	
Programmatic implications: Early postpartum counseling and support were beneficial.	

Table 1. Early Initiation: Summary of Interventions and Benefits

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Prenatal Education**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Community Educ.**	**Post-partum Clinics**	**Beneficial?**
Langer et al., 1996	Mexico	A				**T**						No
Sanghvi, 1995	Brazil	B		**T**								Yes
Valdés et al., 1993	Chile	B	**T**	**T**	**T**							Yes
Prasad & Costello, 1995	India	B			**T**							Yes
Gerung, 1989	Indonesia	B		**T**	**T**							Yes
Vandale-Toney et al., 1992	Mexico	B		**T**	**T**							No
Righard & Alade, 1990	Sweden	B		**T**								Yes
Kistin et al., 1994	USA	B				**T**						Yes
Holley-Newsome, 1995	Armenia	C					**T**					Possibly
Popkin et al., 1991	Honduras	C		**T**	**T**							Yes
Lal et al., 1992	India	C						**T**				Yes
McDivitt et al., 1993	Jordan	C					**T**					Yes
Bradley & Meme, 1992	Kenya	C		**T**	**T**							Yes
Huffman, 1991	Panama	C		**T**	**T**							Yes

Table 2. Feeding of Colostrum: Summary of Interventions and Benefits

			INTERVENTIONS									
Reference	**Country**	**Study Design**	**Prenatal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Community Educ.**	**Post-partum Clinics**	**Beneficial ?**
MkNelly, 1997	Ghana	A						**T**				Yes
Griffiths, 1991; Zeitlin et al., 1989	Indonesia	A				**T**	**T**					Yes
Gottert, 1995; Ross, 1997	Mali	A					**T**			**T**		Yes
Prasad & Costello, 1995	India	B			**T**							Yes
Tamagond & Saroja, 1992	India	B	**T**									Yes
Gerung, 1989	Indonesia	B		**T**	**T**							Yes
Valdés et al., 1994	Chile	C			**T**							Yes
Bradley & Meme, 1992	Kenya	C		**T**	**T**							Yes
Clavano, 1982	Philippines	C		**T**								Yes

Table 3A. Exclusive Breastfeeding: Summary of Interventions and Benefits

		INTERVENTIONS										
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Community Educ.**	**Post-partum Clinics**	**Beneficial ?**
Haider et al., 1996	Bangladesh	A		**T**					**T**			Yes
Alvarado et al., 1996	Chile	A	**T**	**T**		**T**					**T**	Yes
AHLACMA, 1993	Honduras	A				**T**		**T**	**T**			Yes
Rivera et al., 1993	Honduras	A				**T**		**T**				Yes for those reached
Gottert, 1995; Ross, 1997	Mali	A				**T**	**T**			**T**		Yes
Langer et al., 1996	Mexico	A				**T**						Slightly
NCP, 1995b; Altobelli, 1993	Peru	A		**T**	**T**		**T**					Yes
Neyzi et al., 1988; Neyzi et al., 1991a	Turkey	A					**T**		**T**			Yes
Neyzi et al., 1991b	Turkey	A									**T**	Yes
Waldenström & Nilsson, 1994	Sweden	A		**T**								No
Dungy et al., 1992	U.S.A.	A		**T**								Yes
Frank et al., 1989	U.S.A.	A		**T**								Yes

Table 3B. Exclusive Breastfeeding: Summary of Interventions and Benefits

		INTERVENTIONS										
Reference	**Country**	**Study Design**	**Prenatal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Community Educ.**	**Post-partum Clinics**	**Beneficial?**
Barros et al., 1995	Brazil	B									**T**	Yes
Lutter et al., 1997	Brazil	B		**T**								Yes
Valdes et al., 1993; Perez & Valdes, 1991; Pugin et al., 1996	Chile	B	**T**	**T**	**T**						**T**	Yes
Valdés et al., 1996	Chile	B									**T**	Yes
Manoff International, 1984	Indonesia	B					**T**		**T**	**T**		Yes
Morrow et al., 1996	Mexico	B	**T**						**T**			Yes
Rodriguez-Garcia et al., 1990	Mexico	B	**T**			**T**						Yes
Vandale-Toney et al., 1992	Mexico	B		**T**	**T**							No
Strachan-Lindenberg et al., 1990	Nicaragua	B		**T**								Yes, at 1 week post-partum
Hofmeyr et al., 1991	South Africa	B				**T**						Yes
Kistin et al., 1994	U.S.A.	B				**T**						Yes
Sciacca et al., 1995	U.S.A.	B	**T**									Yes
Wiles, 1984	U.S.A.	B	**T**									Yes

Table 3C. Exclusive Breastfeeding: Summary of Interventions and Benefits

		INTERVENTIONS										
Reference	**Country**	**Study Design**	**Prenatal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Community Educ.**	**Post-partum Clinics**	**Beneficial?**
Rea & Berquó, 1990	Brazil	C		**T**	**T**		**T**					Probably
Burkhalter & Marin, 1991	Chile	C	**T**			**T**			**T**		**T**	Yes
Stone-Jiménez & de Maza, 1993	Guatemala	C				**T**		**T**				Yes
NCP, 1995; Hernandez et al., 1995	Honduras	C			**T**		**T**					Yes
Popkin et al., 1991; Huffman et al., 1991	Honduras	C		**T**	**T**				**T**			Yes
Wellstart International, 1998	India	C		**T**	**T**							Yes
IMSS, [no date]	Mexico	C		**T**	**T**		**T**	**T**			**T**	Probably
Huffman, 1991	Panama	C		**T**								Probably
Creed-Kanashiro et al., 1994 and 1995	Peru	C					**T**			**T**		Yes
Nylander et al., 1991	Norway	C		**T**	**T**							Yes

Table 4. Continued Breastfeeding: Summary of Interventions and Benefits

		INTERVENTIONS										
Reference	**Country**	**Study Design**	**Pre-natal Educ.**	**Hospital Policies/ Actions**	**Health Worker Training**	**Peer Coun-seling**	**Mass Media**	**Women's Groups**	**Home Visits**	**Community Educ.**	**Post-partum Clinics**	**Beneficial?**
Salariya et al., 1978	U.K.	A		**T**								Yes
Vandale-Toney et al., 1992	Mexico	B		**T**	**T**							Partly
Stone-Jimenez & de Maza, 1993	Guatemala	C				**T**		**T**				Probably
Popkin et al., 1991	Honduras	C		**T**	**T**				**T**			Probably
Bradley & Meme, 1992	Kenya	C		**T**	**T**							Probably
Saunders & Carroll, 1988	U.S.A.	C		**T**				**T**				Yes

Table 5. Early Initiation

Part A. Studies Comparing Intervention and Control or Comparison Groups before and after the Intervention

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Langer et al., 1996 Mexico 1c,2	Women delivering at an urban social security hospital	Control: no family members or friends allowed in delivery room Int: first-time mothers assigned a woman to provide social support during delivery and to discuss breastfeeding post-delivery.	Contr: 363; Int: 361	8% of infants were breastfed in the 1st 8 hours after birth.	11% of infants were breastfed in the 1st 8 hours after birth.	Providing social support at the time of delivery had little effect because it did not change hospital norms.

Part B. Studies Comparing Intervention and Control or Comparison Groups (no baseline)

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Sanghvi, 1995 Brazil 1a,1b,1c,2,5	Mothers delivering at 2 hospitals	Int: hospital actively promoted breastfeeding by avoiding mother-infant separation, allowing mothers to hold infant in delivery room, assisting with breastfeeding the 1st time, giving talks in-hospital, and counseling in the 1st month postpartum. Such policies were less actively promoted in the control hospital.	Preint: 152; Int: 168	3% of mothers breastfed their infant within ½ hour of birth.	46% of mothers breastfed their infant within ½ hour of birth.	Rigorous implementation of baby-friendly hospital policies was beneficial.
Valdés et al., 1993; Peréz & Valdés, 1991; Pugin, 1996 Chile 1b,1c,2,5	Middle-class, urban women delivering at a private hospital	Control: routine postnatal care Int: Intervention group benefitted from 5 activities: training of health providers, activities at prenatal clinic, hospital activities, changes in hospital policies to permit early contact, & lactation clinic.	Contr: 313; Int: 422	Average time from birth to breastfeeding initiation was 6.7 hours.	Average time from birth to breastfeeding initiation was 2.8 hours ($p<0.0001$).	The combination of training of health workers, prenatal education, hospital education, early contact, & lactation clinic was beneficial.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Prasad & Costello, 1995 India 1c,2	Rural mothers delivering at a government district hospital, mostly illiterate and primiparous	Preint: routine nursery care Int 1: maternity care workers trained to assist mothers to nurse in hospital, subjects delivering within 20 days of workers' training Int 2: maternity care workers trained to assist mothers to nurse, subjects delivering 6 months after workers' training	Preint: 172; Int 1: 195; Int 2: 101	3% of mothers initiated breastfeeding within 1 hour after delivery.	Int 1: 60% of mothers initiated breastfeeding within 1 hour of delivery. Int 2: 14% of mothers initiated breastfeeding within 1 hour of delivery.	Training maternity care staff was beneficial, but the effects eroded 6 months after training.
Gerung, 1989 Indonesia 1a, 1c,2,5	Rural women delivering at a private hospital	Preint: newborns separated from mothers for 3-5 hours after birth, given fluids, followed by rooming-in Int: newborns put to breast immediately after birth, no prelacteal feeds, breastfeeding on demand, health workers trained, rooming-in	Preint: 376; Postint: 245	In 1985, 33% of mothers breastfed their newborn exclusively during their hospital stay.	In the 9 months following the intervention (Apr.-Dec. 1986), 94% of mothers breastfed their newborn exclusively during their hospital stay.	Changing hospital policies and training health workers appear to be beneficial, although a community-wide campaign promoting breastfeeding may have confounded results.
Vandale-Toney et al., 1992 Mexico 1a,1c,4	First-time mothers delivering at a large urban hospital	Control: women who delivered prior to hospital's new program Int: hospital adopted new program, including staff training in lactation management, promotion of early initiation, classes for 1st-time mothers, individual guidance in lactation management, and limitations on bottle feeding.	Contr: 175; Postint: 176	The average time between delivery and first nursing was 1.6 hours.	The average time between delivery and first nursing was 1.3 hours (n.s.).	Intervention had no significant impact on breastfeeding initiation.
Righard & Alade, 1990 Sweden 1a, 1c, 2,3,5,10	Women delivering in 2 urban university hospitals	Control: newborns rested on mother's abdomen for 15-20 minutes, were removed for 20 minutes and then were returned. Int: newborns stayed with their mother for at least 1 hour or until the 1st breastfeed had been accomplished.	Contr: 34; Int: 38	At 2 hours after birth, 21% of newborns had the correct sucking technique.	At 2 hours after birth, 63% of newborns had the correct sucking technique ($p<0.01$).	Keeping newborns with their mother for at least 1 hour or until the 1st breastfeed was beneficial.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Kistin, Abramson & Dublin, 1994 U.S.A. 1b,1c,2,10	Low-income minority women who intended to breastfeed and had requested a counselor, delivering at an urban public hospital	Control: women who requested a counselor but did not receive one due to inadequate numbers of trained counselors Int: women who talked with a trained volunteer peer counselor before delivery, at least twice weekly until breastfeeding was established, every 1-2 weeks for the next 2 months, and then as needed.	Contr: 43; Int: 59	At hospital discharge, 70% had initiated breastfeeding.	At hospital discharge, 93% had initiated breastfeeding ($p<0.05$).	Individual counseling by volunteer peers was beneficial.

Part C. Studies Comparing the Same Group(s) before and after the Intervention

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Holley-Newsome, 1995, Armenia 1a,1b,1c,2,3,10	Mothers (average age 23) of newborns, attending urban clinics	One-month national media campaign with TV & radio spots, newspaper ads & brochures.	Preint: 479; Postint: 37	12% initiated breastfeeding within 0-6 hours after delivery.	73% initiated breastfeeding within 0-6 hours after delivery.	Improvements were observed but are not clearly attributable to the intervention.
Popkin et al., 1991; Huffman et al., 1991 Honduras 1a,2,5,9	Health professionals and post-partum women living in 19 low-income communities of Tegucigalpa	Counseling in hospital maternity wards & home visits by breastfeeding specialists, training of health workers, changes in hospital practices to promote early initiation and rooming-in and eliminate routine formula feeding.	Preint: 334 health prof. & 449 new mothers; Postint: 166 health prof. & 166 new mothers	In 1982 27% of urban health professionals recommended that women initiate breastfeeding at birth. In 1982 none of the mothers initiated breastfeeding during the 1st hour after birth.	In 1985 87% of urban health professionals recommended that women initiate breastfeeding at birth ($p<0.01$). In 1985 more than 50% of the mothers in 2 of the 3 hospitals initiated breastfeeding during the 1st hour after birth.	The combination of hospital counseling, training of health workers & changes in hospital practices was beneficial.

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Lal et al., 1992 India 1a,1b,2,9	Mothers living in 10 villages in Haryana state	12 existing women's groups received 1-week training in maternal and child health. Members attended weekly educational meetings, and each one volunteered to contact 10-20 households to promote improved health practices.	Preint: 300; Postint: 300	In 1988 23% of mothers began breastfeeding immediately after birth or on the same day.	In 1990 60% of mothers began breastfeeding immediately after birth or on the same day ($p<0.05$).	Community education by members of women's groups appears to have been beneficial.
McDivitt et al., 1993 Jordan 1a	Mothers of children aged 2 & younger nationwide	Int: seminar for health professionals and two mass media campaigns lasting 2 months each, with daily radio & TV spots.	Preint: 930; Postint: 966	In 1988 40% of mothers initiated breastfeeding within 6 hours after birth.	In 1990 54% of mothers initiated breastfeeding within 6 hours after birth ($p<0.05$).	The mass media campaign and seminar for health professionals were beneficial. Private hospitals did not change policies preventing early initiation.
Bradley & Meme, 1992 Kenya 1a,1b,2,9	Hospital policy-makers and senior staff and maternity ward staff in 58 hospitals nationwide	Int: national breastfeeding program: adoption of Code of Marketing of Breastmilk Substitutes, directives to hospitals to promote early breastfeeding & rooming-in, & training of health workers.	Preint: 195 health workers; Postint: 109 hospital policy-makers & senior staff; 175 maternity ward staff	14% of health workers reported that babies were put to breast within 1 hour of birth.	61% of health workers reported that babies were put to breast within 1 hour of birth.	The national program appears to have been beneficial in changing health workers' practices. Eliminating infant formula was effective in changing hospital practices.
Huffman, 1991 Panama 1a,1c,5	Women delivering in Penonome Hospital, which serves a 75% rural area	Preint: newborn infants were fed breastmilk substitutes and kept in a separate nursery until hospital discharge 24 hours after delivery Int: hospital policies were changed to eliminate formula feeding and reduce mother-child separation to ½ -3 hours.	Sample size was not reported.	In 1984 Penonome Hospital provided 5,855 bottles to newborns.	In 1986 Penonome Hospital provided 1,750 bottles to newborns -- less than 1/3 of previous levels.	Changes in hospital practices appear to have been beneficial.

n.s. = not significant

Methodological Limitations (based on WHO's ***Evidence for the Ten Steps to Successful Breastfeeding***)

1. Inadequate control: (a) pre-post comparison without control group; (b) inadequate documentation of between-group differences and similarities; and (c) baseline behavioral measurements inadequate or lacking
2. Confounding variables not controlled
3. Self-selection of participants
4. High attrition (more than 10% attrition rate unevenly distributed)
5. Undetermined internal validity: unreported attrition, poorly documented methodology or unpublished brief communication
6. One-to-one comparison
7. Long recall period
8. Unclear definition of breastfeeding indicators
9. Based on planned or reported breastfeeding
10. Small sample size (<100)

Table 6. Feeding Colostrum

Part A. Studies Comparing Intervention and Control or Comparison Groups before and after the Intervention

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
MkNelly, 1997 Ghana 1b,3,9,10	Rural mothers of one-year-old children	Control 1: women in communities without Credit with Education programs Control 2: nonparticipants in program communities Int 1: women who had participated in program (small group education and discussions) for >1 yr.	Contr 1: 102; Contr 2: 112; Int 1: 55	Contr 1: 71% fed colostrum. Contr 2: 76% fed colostrum.	Int. 1: 96% fed colostrum.	Group education and discussion were beneficial to participants but had no effect on non-participants living in the same community.
Griffiths, 1991; Zeitlin et al., 1989 Indonesia 1b,2	Rural and semi-urban mothers of children <2 yrs.	Control: no nutrition education Int: nutrition education by village volunteers at health posts plus radio and print materials	Contr: 387; Int: 390	38% fed colostrum.	50% fed colostrum (of those exposed to materials, 63% fed colostrum).	Education by village volunteers plus radio and print materials were beneficial.
Gottert, 1995; Ross, 1997 Mali 1b,2,10	Mothers of children <3 yrs. old	Control: no nutrition education Int: individual counseling and group education by field workers, village meetings, radio and print materials	Contr: 97; Int: 196	42% fed colostrum.	58% fed colostrum.	Combination of interpersonal and mass media interventions was beneficial.

Part B. Studies Comparing Intervention and Control or Comparison Groups (no baseline)

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Prasad & Costello, 1995 India 1c,2	Rural mothers delivering at a government district hospital, mostly illiterate and primiparous	Preint: routine nursery care Int 1: maternity care workers trained to assist mothers to nurse in hospital, subjects delivering within 20 days of workers' training Int 2: maternity care workers trained to assist mothers to nurse, subjects delivering 6 months after workers' training	Preint: 172; Int 1: 195; Int 2: 101	96% of mothers gave prelacteal feeds.	Int 1: 43% of mothers gave prelacteal feeds. Int 2: 77% of mothers gave prelacteal feeds.	Training maternity care staff was beneficial, but the effects eroded 6 months after training.
Tamagond & Saroja, 1992 India 1b,1c,10	Urban pregnant women with >5 years' education & previous child not fed colostrum	Control: routine prenatal care Int 1: 3 prenatal lectures & discussion Int 2: 3 pamphlets sent by mail before delivery	Contr: 40; Int 1: 40; Int 2: 40	0 fed colostrum post-intervention.	Int 1: 33% fed colostrum exclusively. Int 2: 43% fed colostrum exclusively.	Both prenatal lectures and pamphlets were beneficial. Pamphlets were more cost-effective.
Gerung, 1989 Indonesia 1a, 1c,2,5	Rural women delivering at a private hospital	Preint: newborns separated from mothers for 3-5 hours after birth, given fluids, followed by rooming-in. Int: hospital changed its procedures: newborns put to breast immediately after birth, no prelacteal feeds, breastfeeding on demand, health workers trained, rooming-in.	Preint: 376; Postint: 245	33% of mothers breastfed their newborn exclusively during 1985; 61% of mothers delivering in the first quarter of 1986 did so.	94% of mothers breastfed their newborn exclusively during the 9 months following the intervention (Apr.-Dec. 1986).	Changing hospital procedures and training health workers appear to have been beneficial, although a community-wide campaign promoting breastfeeding may have confounded the results.

Part C. Studies with Non-experimental Designs (Comparing One or More Groups before and after the Intervention)

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Valdes et al., 1994 Chile 1a,1c,2,3,4,7,9	Health professionals (midwives, nurses, physicians and others)	Int: 3-day course for 360 health professionals. Two years later, participants were surveyed on practices before and after course.	Postint: 100	75% of health workers report that newborns are fed colostrum as 1st feeding.	91% of health workers report that newborns are fed colostrum as 1st feeding.	Study provides weak support for use of training to change behaviors of health professionals.
Bradley & Meme, 1992 Kenya 1a,1b,2,9	Maternity ward staff in 58 hospitals throughout the country	Preint: routine prelacteal feedings Int: MOH directive to stop routine prelacteal feedings; adoption of Code of Marketing of Breastmilk Substitutes; training of health workers	Preint: 195; Postint: 175	93% of health workers reported prelacteal feeds as the norm.	48% of health workers reported prelacteal feeds as the norm.	The MOH program preceded reduction in reported prelacteal feeds.
Clavano, 1982 Philippines 1a,1b,2	Mothers delivering at an urban hospital	Preint: bottlefeeding in nurseries, 8-12-hour starvation period after birth Int: rooming-in, breastfeeding on demand, 2-hour starvation period	Preint: 4,720; Postint: 5,166	40% breastfed newborns.	87% breastfed newborns.	Changes in hospital procedures appear to have been beneficial.

n.s. = not significant

Methodological Limitations (based on WHO's *Evidence for the Ten Steps to Successful Breastfeeding*)

1. Inadequate control: (a) pre-post comparison without control group; (b) inadequate documentation of between-group differences and similarities; and (c) baseline behavioral measurements inadequate or lacking
2. Confounding variables not controlled
3. Self-selection of participants
4. High attrition (more than 10% attrition rate unevenly distributed)
5. Undetermined internal validity: unreported attrition, poorly documented methodology or unpublished brief communication
6. One-to-one comparison
7. Long recall period
8. Unclear definition of breastfeeding indicators
9. Based on planned or reported breastfeeding
10. Small sample size (<100)

Table 7. Exclusive Breastfeeding

Part A. Studies Comparing Intervention and Control or Comparison Groups before and after the Intervention

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Haider et al., 1996 Bangladesh 2	Mothers of partially breastfed infants under 12 weeks old admitted to hospital due to diarrhea	Control: routine group education Int: individual counseling and home visits 1 & 2 weeks after hospital discharge.	Contr: 125; Int: 125	6% of mothers were breastfeeding exclusively at discharge, and 8% at 2 weeks after discharge.	60% of mothers were breastfeeding exclusively at discharge ($p<0.001$), and 75% at 2 weeks after discharge ($p<0.001$).	Individual counseling in hospital and home visits was beneficial in restoring exclusive breastfeeding.
Alvarado et al., 1996 Chile 1b,1c,2,10	Low-income urban women delivering in hospital	Control: 4 clinic visits during the 1st 6 months postpartum for routine pediatric care. Int: 8 clinic visits during the 1st 6 months postpartum, visits by peer educators at home in the last 3 months of pregnancy and in the hospital post-delivery, 2-hour workshops led by peer educators attended twice during pregnancy and monthly during the 1st 6 months postpartum.	Contr: 62; Int: 66	At 1 month of age, 76% of the infants were being exclusively breastfed., compared with 8%at 4 months of age, and none at 6 months of age.	At 1 month of age, 100% of the infants were being exclusively breastfed ($p<0.01$). At 4 months of age, 90% were still being exclusively breastfed ($p<0.01$), and 42% at 6 months of age ($p<0.01$).	Frequent clinic visits and visits and educational workshops by peer educators were beneficial.
AHLACMA, 1993 Honduras 2	Pregnant women and women with children under age 1 living in 40 rural communities	Control: routine health education by community health educators, midwives & volunteers Int: monthly group meetings organized by trained volunteer peer counselors, home visits by peer counselors, and print materials.	Contr: Pre. 209 & Post. 226 ; Int: Pre. 207 & Post. 221	Mean duration of exclusive breastfeeding declined from 2.2 months to 1.3 months.	Mean duration of exclusive breastfeeding increased from 1.2 months to 3.0 months.	The various educational activities of the trained peer counselors were more effective than routine health education programs.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Rivera et al., 1993 Honduras 1b,9	Low-income mothers of infants <1 years old living in an urban area	Control: health professionals in community were trained Int: same as control plus individual counseling by a trained peer and mothers' support group meetings led by peer counselor (Only 12% of mothers had any contact with the peer educators; 7% attended a support group meeting).	Baseline: 922; Contr: 435; Int: 487	At baseline and endline, infants were exclusively breastfed for about 4 weeks.	At baseline and endline, infants were exclusively breastfed for about 4 weeks (n.s.). Mothers who had contact with the peer counselors breastfed exclusively for 9.6 weeks.	Peer education and mothers' support groups had no impact on community-wide duration of exclusive breastfeeding, probably due to limited coverage.
Gottert, 1995; Ross, 1997 Mali 1b,2,10	Mothers of children <3 years old	Control: no nutrition education Int: individual counseling and group education by field workers, village meetings, radio and print materials	Contr: 97; Int: 196	10% of mothers did not give water to infants under 4 months old.	21% of mothers did not give water to infants under 4 months old.	The combination of interpersonal and mass media interventions was beneficial.
Langer et al., 1996 Mexico 1b,2	Women delivering at an urban social security hospital	Control: no family members or friends allowed in delivery room Int: first-time mothers assigned a woman to provide social support during delivery and to discuss breastfeeding post-delivery.	Contr: 363; Int: 361	7% of infants were exclusively breastfed at 1 month postpartum	12% of infants were exclusively breastfed at 1 month postpartum	Providing social support at the time of delivery was modestly beneficial.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Nutrition Communication Project, 1995b; Altobelli, 1993 Peru 1b,2,10	Low-income urban mothers delivering at 3 hospitals	Control: no materials; 40% of mothers received breastfeeding education Int 1: training course for health workers; print materials for health workers & mothers; 75% of mothers received breastfeeding education Int 2: most comprehensive hospital program; 90% of mothers received breastfeeding education	Contr: 107; Int 1: 99; Int 2: 115	20% of infants were exclusively breastfed at 2 weeks postpartum, and 8% at 12 weeks postpartum.	Int 1: 35% of infants were exclusively breastfed at 2 weeks postpartum, (signif.) and 17% at 12 weeks postpartum (n.s.). Int 2: 62% of infants were exclusively breastfed at 2 weeks postpartum (signif.), and 52% at 12 weeks postpartum (n.s.). Mothers in Int 2 had higher rates of exclusive breastfeeding at 4 weeks postpartum ($p<0.05$) than those in Int 1, but rates at 8 and 12 weeks postpartum were not significant.	Training health workers and providing print materials were beneficial. More exposure was associated with improved breastfeeding practices.
Neyzi et al., 1988; Neyzi et al., 1991a Turkey 4	Middle-income women delivering in an urban social security hospital	Control: 8-minute film on ORT and home visit 5-7 days postpartum on hygiene and baby care; Int: same as control group plus breastfeeding education via a 10-minute film, 40-minute group educational session, 20-30 minute home visit and brochure. Both: hospital did not have rooming-in or supportive routines.	Contr: 499; Int: 442	12% of the mothers were exclusively breastfeeding at 1 week postpartum, 4% at 1 month postpartum, 2% at 2 months postpartum, and 0.2% at 3 months postpartum.	47% of the mothers were exclusively breastfeeding at 1 week postpartum, 16% at 1 month postpartum, 4% at 2 months postpartum., and 1% at 3 months postpartum.	The in-hospital education and home visits were beneficial for the 1st 2 months postpartum.
Neyzi et al., 1991b Turkey 1b	Middle-income women delivering in an urban social security hospital	Control: routine follow-up Int: continuing support through visits at 2 weeks and 1, 2, 3, & 4 months at well-baby clinic at the hospital.	Contr: 442; Int: 146	Prevalence of exclusive breastfeeding fell from 47% at 1 week postpartum to 4% at 2 months postpartum and <1% at 4 months postpartum.	Prevalence of exclusive breastfeeding fell from 47% at 1 week postpartum to 17% at 2 months postpartum and 5% at 4 months postpartum	Regular medical visits were beneficial in maintaining breastfeeding up to 4 months.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Waldenström & Nilsson, 1994 Sweden	Urban women	Control: delivery in hospital Int: delivery in birth center that provides psychologically supportive care with minimal medical technology Early breastfeeding initiation, feeding on demand, and correct positioning were similar for both groups.	Contr: 613; Int: 617	At 2 months postpartum, 93% were exclusively breastfeeding.	At 2 months postpartum, 93% were exclusively breastfeeding.	The place of delivery appears to be less important than breastfeeding initiation routines, rooming-in and feeding on demand.
Dungy et al., 1992 U.S.A. 1b,4,9,10	Middle-income, well-educated women delivering at an urban hospital, who had initiated breastfeeding	Control: commercially available infant formula package at hospital discharge Int: discharge pack containing a manual breast pump, breast pads & breast cream.	Contr:73; Int: 73	Mean duration of exclusive breastfeeding was 2.8 weeks.	Mean duration of exclusive breastfeeding was 4.2 weeks ($p<0.05$).	The discharge pack containing a manual breast pump was beneficial.
Frank et al., 1987 U.S.A. 10	Women delivering at an urban hospital serving mainly low-income women	Control: routine breastfeeding counseling (nursing counseling, breastfeeding classes & handouts) and commercial discharge pack (pamphlets, nipples & water) Int 1: routine breastfeeding counseling and research discharge pack (pamphlets & breast pads) Int 2: research breastfeeding counseling (individual counseling in hospital & 8 telephone calls up to 12 weeks postpartum) and commercial discharge pack Int 3: research breastfeeding counseling and research discharge pack	Contr: 83; Int 1: 78; Int 2: 84; Int 3: 79	Prevalence of exclusive breastfeeding was 53%, 20%, 6% & 5% at 1, 2, 3, & 4 months postpartum, respectively.	Prevalence of exclusive breastfeeding at 1, 2, 3, & 4 months postpartum was, respectively, Int 1: 53%, 28%, 15% & 6%; Int 2: 57%, 29%, 6% & 2%; Int 3: 62%, 43%, 20% & 9%. Women who received the research pack were more likely to be exclusively breastfeeding at 4 months postpartum than those who received the commercial pack ($p<0.01$). The group with the research pack and research counseling had higher rates of exclusive breastfeeding at 4 months postpartum than the other 3 groups ($p<0.05$).	The individual counseling in hospital & follow-up telephone calls were beneficial for 2 months postpartum. The discharge pack promoting breastfeeding was beneficial for 4 months postpartum.

Part B. Studies Comparing Intervention and Control or Comparison Groups (no baseline)

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Barros et al., 1995 Brazil 1c,2,3	Low- and middle-income urban mothers delivering in hospital	Control: mothers who did not attend a lactation center. Int: mothers who attended a lactation center during their infant's 1st 4 months. The centers offered individual counseling and group consultations (4 mother-infant pairs at a time).	Contr: 246; Int: 289	31% of infants were exclusively breastfed at 1 month postpartum, 18% at 4 months, and 6% at 6 months.	55% of infants were exclusively breastfed at 1 month postpartum ($p<0.001$), 43% at 4 months ($p<0.001$), and 15% at 6 months ($p<0.001$). 23% of those attending 5 or more times were exclusively breastfed at 6 months of age.	Lactation centers were beneficial.
Lutter et al., 1997 Brazil 1c,2	Low-income urban women delivering in hospital	Control: no breastfeeding promotion in hospital. Most mothers had no separations >15 minutes and received no breastmilk substitutes, but only one-third received help with breastfeeding the 1st time. Int: active breastfeeding promotion. Most mothers breastfed their infant in the delivery room, had no separations >15 minutes, received no breastmilk substitutes, and received a talk, brochure and help with breastfeeding the 1st time.	Contr: 206; Int: 236	Mothers breastfed exclusively for an average of 22 days.	Mothers breastfed exclusively for an average of 75 days ($p<0.01$).	The hospital program was beneficial. The relative importance of specific components could not be ascertained.
Valdés et al., 1993; Peréz & Valdés, 1991; Pugin et al., 1996 Chile 1b,1c,2,5,10	Middle-class, urban women delivering at a private hospital	Control: routine postnatal care Int 1: Intervention group benefitted from 5 activities: training of health providers, activities at prenatal clinic, hospital activities, changes in hospital policies to permit early contact, & lactation clinic Int 2: Same as Int 1 plus group education at prenatal clinics	Contr: 313; Int 1: 363; Int 2: 59	32% of infants were fully breastfed at 6 months postpartum.	Int 1: 65% of infants were fully breastfed at 6 months ($p<0.0001$). Int 2: 80% of infants were fully breastfed at 6 months ($p<0.01$).	The combination of training of health workers, prenatal education, hospital education, early contact, & lactation clinic was beneficial. Prenatal group education provided further benefits.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Valdés, 1996 Chile 1b,1c,2,3,	Low- and middle-class urban women who were exclusively breastfeeding at 30 days postpartum and planned to return to work before 120 days postpartum	Control: routine pediatric care with follow-up calls to collect information on infant feeding and health monthly for 6 months and at 12 months Int: women received individual counseling on breastfeeding and were taught hand expression plus monthly clinic visits for the 1st 6 months postpartum and at 12 months.	Contr: 116; Int: 146	At 6 months postpartum 6% were exclusively breastfeeding.	At 6 months postpartum 54% were exclusively breastfeeding.	Individual counseling and monthly clinical support were beneficial.
Manoff International, 1984 Indonesia 1b,1c,2,9	Rural mothers of children <2 years old in 3 regions	Control: routine health education by village volunteers Int: child weighing, home visits and community meetings by village volunteers; posters; and radio minidramas	Contr: 318; Int: 464	41% of mothers waited until the child's 5th month to introduce foods.	57% of mothers waited until the child's 5th month to introduce foods ($p<0.001$).	Education by village volunteers, posters and radio was beneficial.
Morrow et al., 1996 Mexico 1b,1c,2,10	Low-income peri-urban women	Control: no home visits Int 1: 3 home visits by trained promoters, in late pregnancy, immediately after delivery and at 2 weeks postpartum Int 2: 6 home visits, 2 visits during pregnancy, immediately after delivery, and postpartum at 2, 4, & 8 weeks.	Contr: 53; Int 1: 53; Int 2: 53	7% of infants were exclusively breastfed from 2 weeks to 3 months of age.	Int 1: 33% of infants were exclusively breastfed from 2 weeks to 3 months of age ($p<0.05$); Int 2: 48% of infants were exclusively breastfed from 2 weeks to 3 months of age ($p<0.05$). Exclusive breastfeeding was significantly higher ($p<0.001$) in the 6-visit group than in the 3-visit group.	Home visits were beneficial, and 6 visits had more impact than 3 visits.
Rodriguez-Garcia et al., 1990 Mexico 1a,1b,2,5	Mothers living in 3 low-income communities who had at least 1 previous birth	Int: Prenatal education, 12 postpartum home visits (twice monthly), and print materials provided by volunteer peer counselors.	Contr: 155; Int: 430	63% of infants were exclusively breastfed in the 1st month postpartum, 15% in the 5th month, and 3% in the 6th month.	71% of infants were exclusively breastfed in the 1st month postpartum, 14% in the 5th month, and 9% in the 6th month.	Peer educators were beneficial in the early months of breastfeeding.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Vandale-Toney et al., 1992 Mexico 1a,1c,4	First-time mothers delivering at a large urban hospital	Contr: women who delivered prior to hospital's new program Int: hospital adopted new program, including staff training in lactation management, promotion of early initiation, classes for 1st-time mothers, individual guidance in lactation management, and limitations on bottle feeding.	Contr: 175; Postint: 176	34% of infants 1 month old were exclusively breastfed. By 4 months postpartum, 2% of the infants were exclusively breastfed.	38% of infants 1 month old were exclusively breastfed (n.s.). By 4 months postpartum, none of the infants were exclusively breastfed (n.s.).	Intervention had no significant impact on exclusive breastfeeding.
Strachan-Lindenberg et al., 1990 Nicaragua 1b,1c	Low-income urban, first-time mothers delivering in hospital	Control: total separation of mother & infant during 12-24 hour hospital stay; routine infant feeding information Int 1: 45-minute mother-infant contact after birth, then separation until discharge; some breastfeeding information Int 2: early contact plus rooming-in; some breastfeeding information.	Contr: 123; Int 1: 136; Int 2: 116	At 1 week postpartum, 32% of mothers were exclusively breastfeeding. This proportion dropped to 10% at 4 months postpartum.	Int 1: 53% of mothers were exclusively breastfeeding at 1 week postpartum ($p<0.001$), and 12% at 4 months postpartum (n.s.). Int 2: 63% of mothers were exclusively breastfeeding at 1 week postpartum ($p<0.001$), and 7% at 4 months postpartum (n.s.).	Increased mother-infant contact after delivery was beneficial at 1 week postpartum but not at 4 months postpartum.
Hofmeyr et al., 1991 South Africa 1c,2,10	Low-income urban, first-time mothers delivering at a community hospital	Control: routine obstetrical care Int : during delivery a peer volunteer provided emotional support; she did not discuss breastfeeding or visit the mother in the postnatal wards	Contr: 75; Int: 74	At 6 weeks postpartum, 29% of the mothers were exclusively breastfeeding.	At 6 weeks postpartum, 51% of the mothers were exclusively breastfeeding ($p<0.01$).	Emotional support during delivery was beneficial, even though volunteers did not discuss breastfeeding.
Kistin, Abramson & Dublin, 1994 U.S.A. 1b,1c,2,10	Low-income minority women who intended to breastfeed and had requested a counselor, delivering at an urban public hospital	Control: women who requested a counselor but did not receive one due to inadequate numbers of trained counselors Int: women who talked with a trained volunteer peer counselor before delivery, at least twice weekly until breastfeeding was established, every 1-2 weeks for the next 2 months, and then as needed.	Contr: 43; Int: 59	At hospital discharge, 40% were exclusively breastfeeding. After >12 weeks postpartum, 7% were exclusively breastfeeding.	At hospital discharge, 77% were exclusively breastfeeding ($p<0.05$). After >12 weeks postpartum, 29% were exclusively breastfeeding ($p<0.05$).	Individual counseling by volunteer peers was beneficial.

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Sciacca et al., 1995 U.S.A. 1c,2,10	Low-income women	Control: breastfeeding education with 5-hour prenatal course, promotional materials, peer support program, & optional 15-minute group class. Int: same breastfeeding education as control group plus 2-hour class for woman & her partner, baby supplies geared to class attendance, free breast pump, and raffle prizes for exclusive or partial breastfeeding.	Contr: 29; Int: 26	55% of the mothers were exclusively breastfeeding at hospital discharge, and 17% at 3 months postpartum.	89% of the mothers were exclusively breastfeeding at hospital discharge ($p<0.05$), and 42% at 3 months postpartum ($p<0.05$).	The additional education, incentives, partner involvement, and breast pump were beneficial. Study did not determine which components were most useful.
Wiles, 1984 U.S.A. 1b,1c,8, 10	First-time mothers who wanted to breastfeed and attended childbirth education classes.	Control: routine obstetrical care Int: prenatal breastfeeding education class	Contr: 20; Int: 20	30% were "totally breastfeeding" at 1 month postpartum.	90% were "totally breastfeeding" at 1 month postpartum.	Prenatal education class was beneficial.

Part C. Studies Comparing the Same Group(s) before and after the Intervention

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Rea & Berquó, 1990 Brazil 1a,1b,2,7,9	Women of all income levels with a child aged 0-12 months in Greater São Paulo	Int: national breastfeeding campaign during 1981-86, including educating health workers on breastfeeding management, implementing rooming-in, restricting infant formula distribution, counseling mothers, and conducting extensive mass media campaigns.	Preint: 500; Postint: 497	In 1981 11% of children aged 5-6 months were exclusively breastfed. In 1981 mean duration of exclusive breastfeeding was 43 days.	In 1987 37% of children aged 5-6 months were exclusively breastfed. In 1987 mean duration of exclusive breastfeeding was 67 days.	The multifaceted national campaign appears to have been beneficial, although results must be interpreted with caution due to the 6-year time differential and possible confounding factors.

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Burkhalter & Marin, 1991 Chile 1a,1b,2,9	Low- and middle-income mothers using a peri-urban government health clinic	Int1: promotion of "exclusive" breastfeeding (breastmilk plus water by cup or spoon) consisted of: 4 prenatal lectures; monthly postnatal clinic visits; 8 home visits; counseling to address problems; and peer group encouragement. Int 2: same as Int 1 but 1 year after intervention had begun and in absence of program founder	Contr: 137; Int 1: 115; Int 2: 117	85% of infants were "exclusively" breastfed (breastmilk & water) at one month of age, 56% at 3 months, and 30% at 6 months.	Int 1: 95% of infants were "exclusively" breastfed (breastmilk & water) at one month of age ($p<0.05$), 80% at 3 months ($p<0.001$), and 74% at 6 months ($p<0.001$). Int 2: 87% of infants were "exclusively" breastfed (breastmilk & water) at one month of age (n.s.), 76% at 3 months ($p<0.01$), and 61% at 6 months ($p<0.001$).	The combination of prenatal and postnatal education, home visits, and peer group encouragement appear to have been beneficial in sustaining "exclusive" breastfeeding (breastmilk & water) longer.
Stone-Jiménez & de Maza, 1993 Guatemala 1a,1b,2,5	Low-income, low-literacy women in 17 peri-urban communities	Int: mother-to-mother support groups in 17 communities, training of volunteer breastfeeding advocates & educational materials	Preint: 250; Postint: 260	In 1990 16% of infants under 4 months and 10% of those under 6 months were exclusively breastfed.	In 1992 22% of infants under 4 months and 18% of those under 6 months were exclusively breastfed.	Mother-to-mother support groups and educational materials appear to have been beneficial.
NCP, 1995; Hernandez et al., 1995 Honduras 1a,7	Mothers of infants	Int: 21-month national breastfeeding campaign included print materials, radio spots and shows, theater performances, and training & educational aids for health workers.	Preint: 706 mothers; Postint: 554 mothers	The prevalence of exclusive breastfeeding was 48% for infants 1 month old, 24% for those aged 4 months, and 7% for those aged 6 months.	The prevalence of exclusive breastfeeding was 70% for infants 1 month old, 31% for those aged 4 months, and 12% for those aged 6 months.	The mass media campaign and training of health workers were beneficial. Print materials and radio spots had broader coverage than health workers.
Popkin et al., 1991; Huffman et al., 1991 Honduras 1a,2,5,9	Postpartum women living in 19 low-income communities of Tegucigalpa	Int: counseling in hospital maternity wards & home visits by breastfeeding specialists, training of health workers, changes in hospital practices to promote early initiation and rooming-in and eliminate routine formula feeding.	Preint: 449 new mothers; Postint: 166 new mothers	In 1982 65% of new mothers introduced some form of supplementation within one month of birth.	In 1985 40% of new mothers introduced some form of supplementation within one month of birth.	The combination of hospital counseling, training of health workers, changes in hospital practices & home visits appear to have been beneficial.

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Wellstart International, 1998 India 1a,5,7	Low-income women delivering at an urban hospital	Int changes in hospital policy: formula & bottles were banned, sick or premature babies fed with a spoon, only human milk was used, staff were trained, rooming-in and Human Milk Bank were established.	Sample size not reported.	In 1980 97% of infants were exclusively breastfed at birth, 74% at 3 months, and 45% at 6 months.	In 1990 100% of infants were exclusively breastfed at birth, 95% at 3 months, and 88% at 6 months.	The changes in hospital policy appear to have been beneficial.
Instituto Mexicano del Seguro Social (IMSS), [no date] Mexico 1a,1b,2,5	Mothers utilizing IMSS hospitals and child care facilities in Mexico City and Veracruz Norte	Int changes in hospital policy: Baby-Friendly Hospital Initiative, no infant formula samples, training of health workers, educational materials, monitoring, mothers' support groups, and postnatal follow-up linking primary health care posts with child care facilities.	Sample size not reported.	In 1991 44% of newborn infants were exclusively breastfed.	In 1993 48% of newborn infants were exclusively breastfed. In 1995 74% of newborn infants were exclusively breastfed.	The combination of approaches appear to have been beneficial, although confounding variables were not controlled.
Huffman, 1991 Panama 1a, 1c,2,5	Women delivering in Penonome Hospital, which serves a 75% rural area	Preint: newborn infants were fed breastmilk substitutes and kept in a separate nursery until hospital discharge 24 hours after delivery Int: hospital policies were changed to eliminate formula feeding and reduce mother-child separation to ½ -3 hours.	Sample size was not reported.	In 1984 30% of infants aged 2-4 months who attended a well-child clinic at Penonome Hospital were exclusively breastfed.	In 1986 57% of infants aged 2-4 months who attended a well-child clinic at Penonome Hospital were exclusively breastfed.	Changes in hospital practices appear to have been beneficial, although confounding variables were not controlled.
Creed-Kanashiro et al., 1994; Creed-Kanashiro et al., 1995 Peru 1a,2	Mothers in 9 low-income, urban communities	Int: community-based campaign provided short courses on lactation and weaning, videos, spots on loud speakers, posters, brochures & radio spots.	Preint: 254; Postint: 297	33% of children aged 0-4 months were exclusively breastfed. By 6 months of age, 93% of mothers had introduced infusions (liquids) and 65% had introduced foods.	43% of children aged 0-4 months were exclusively breastfed (n.s.). By 6 months of age, 84% of mothers had introduced infusions (liquids) ($p<0.01$). and 54% had introduced foods ($p<0.001$).	The major benefit of the community campaign was to delay introduction of liquids and foods.

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Nylander et al., 1991 Norway 1a,2,4,9	Women delivering at an urban hospital and attending local child health care centers	Preint: newborn infants were routinely given supplementary feedings during their 1st week of life. Int: the hospital changed its practices to promote early, frequent and unsupplemented breastfeeding. Health workers were trained and supervised by 2 physicians.	Preint: 204; Int: 203	At 1½ months after birth, 76% of infants were exclusively breastfed. This proportion fell to 57% at 3 months of age and 12% at 6 months of age. Mean duration of exclusive breastfeeding was 3.5 months.	At 1½ months after birth, 93% of infants were exclusively breastfed ($p<0.001$). This proportion fell to 75% at 3 months of age ($p<0.001$) and 22% at 6 months of age ($p<0.01$). Mean duration of exclusive breastfeeding was 4.5 months ($p<0.01$).	Changes in hospital practices appear to be beneficial, although confounding variables were not controlled.

n.s. = not significant

Methodological Limitations (based on WHO's *Evidence for the Ten Steps to Successful Breastfeeding*)

1. Inadequate control: (a) pre-post comparison without control group; (b) inadequate documentation of between-group differences and similarities; and (c) baseline behavioral measurements inadequate or lacking
2. Confounding variables not controlled
3. Self-selection of participants
4. High attrition (more than 10% attrition rate unevenly distributed)
5. Undetermined internal validity: unreported attrition, poorly documented methodology or unpublished brief communication
6. One-to-one comparison
7. Long recall period
8. Unclear definition of breastfeeding indicators
9. Based on planned or reported breastfeeding
10. Small sample size (<100)

Table 8. Continued Breastfeeding

Part A. Studies Comparing Intervention and Control or Comparison Groups before and after the Intervention

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Salariya, Easton & Cater, 1978 U.K. 8,9,10	First-time mothers who had chosen to breastfeed, delivering at an urban hospital	Contr: mothers who initiated breastfeeding 4-6 hours after delivery and breastfed every 4 hours; Int 1: mothers who initiated breastfeeding 4-6 hours after delivery and breastfed every 2 hours; Int 2: mothers who initiated breastfeeding within 10 minutes after delivery and breastfed every 4 hours; Int 3: mothers who initiated breastfeeding within 10 minutes after delivery and breastfed every 2 hours.	Contr: 28; Int 1: 27; Int 2: 27; Int 3: 29.	Median duration of breastfeeding was 77 days.	Median duration of breastfeeding was: Int 1: 112 days; Int 2: 140 days; Int 3: 182 days.	Early initiation and frequent feeding were beneficial.

Part B. Studies Comparing Intervention and Control or Comparison Groups (no baseline)

Author, Country, Methodological Limitations	Population Characteristics	Control/ Intervention	Sample Size	Results		Conclusion
				Control	Intervention	
Vandale-Toney et al., 1992 Mexico 1a,1c,4	First-time mothers delivering at a large urban hospital	Contr: women who delivered prior to hospital's new program Int: hospital adopted new program, including staff training in lactation management, promotion of early initiation, classes for 1st-time mothers, individual guidance in lactation management, and limitations on bottle feeding.	Contr: 175; Postint: 176	Median duration of breastfeeding was 12 weeks.	Median duration of breastfeeding was 17 weeks (n.s.). The difference in the proportion of infants still being nursed at 16 weeks was statistically significant.	Changes in hospital practices appear to have been somewhat beneficial.

Part C. Studies with Non-experimental Designs (Comparing One or More Groups Before and After the Intervention)

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Stone-Jiménez & de Maza, 1993 Guatemala 1a,1b,5	Low-income, low-literacy women in 17 peri-urban communities	Int: mother-to-mother support groups in 17 communities, training of volunteer breastfeeding advocates and educational materials.	Preint: 250; Postint: 260	In 1990 25% of children aged 20-24 months were breastfed.	In 1992 28% of children aged 20-24 months were breastfed.	Mother-to-mother support groups and educational materials did not appear to affect duration.
Popkin et al., 1991 Honduras 1a,2,5,9	Int:Urban women delivering at hospitals; 4 sites during 1983-85; 18 sites nationwide during 1986-89. Data: 3 national surveys of urban mothers of infants under 24 months	Radio spots began in 1981. In 1983-85 the PROALMA project implemented a combination of interventions in 4 sites: counseling in hospital maternity wards & home visits by breastfeeding specialists, training of health workers, changes in hospital practices to promote early initiation and rooming-in and eliminate routine formula feeding. In 1986-89 the PROALMA project expanded to 14 more sites.	1981 CFS, 468; 1984 MCH/FP survey, 530; 1987 EFHS, 995.	In 1981 median duration of breastfeeding among urban women was 4.1 months.	Median duration of breastfeeding among urban women was 8.9 months in 1984 and 9.9 months in 1987.	The combination of hospital counseling, training of health workers, changes in hospital practices, & home visits appears to have been beneficial, although other factors cannot be ruled out.
Bradley & Meme, 1992 Kenya 1a,1b,2,9	Hospital policy-makers and senior staff and maternity ward staff in 58 hospitals nationwide	Int: national breastfeeding program: adoption of Code of Marketing of Breastmilk Substitutes, directives to hospitals to promote early breastfeeding & rooming-in, and training of health workers.	Preint: 195 health workers; Postint: 109 hospital policy-makers & senior staff; 175 maternity ward staff	Mean duration of breastfeeding was less than 14 months in 1979.	Mean duration of breastfeeding was 19.4 months in 1989.	The national program adopted in 1982 was followed by an increase in breastfeeding duration.

Author, Country, Methodological Limitations	Population Characteristics	Intervention	Sample Size	Results		Conclusion
				Pre-intervention	Post-intervention	
Saunders & Carroll, 1988 U.S.A. 1a,1c,2,5,9,10	Low-income, predominantly Hispanic women living in rural New Mexico; all initiated breastfeeding at the hospital after delivery	Int: mothers were exposed to one or more of 3 interventions: (1) a hospital visit 1-3 days postpartum to discuss breastfeeding; (2) a telephone call or letter 4-5 days postpartum; and (3) a structured group support class at 2 weeks postpartum.	Preint: 75; Postint: 80	The proportion of women breastfeeding dropped from 100% post-delivery to 71% at 4 weeks postpartum and 47% at 16 weeks.	Among women who received all three interventions, the proportion breastfeeding dropped from 100% post-delivery to 95% at 4 weeks postpartum and 67% at 16 weeks ($p<0.001$ to 0.05).	Mothers who had support during the 1st 2 weeks postpartum breastfed longer than other mothers.

n.s. = not significant

Methodological Limitations (based on WHO's *Evidence for the Ten Steps to Successful Breastfeeding*)

1. Inadequate control: (a) pre-post comparison without control group; (b) inadequate documentation of between-group differences and similarities; and (c) baseline behavioral measurements inadequate or lacking
2. Confounding variables not controlled
3. Self-selection of participants
4. High attrition (more than 10% attrition rate unevenly distributed)
5. Undetermined internal validity: unreported attrition, poorly documented methodology or unpublished brief communication
6. One-to-one comparison
7. Long recall period
8. Unclear definition of breastfeeding indicators
9. Based on planned or reported breastfeeding
10. Small sample size (<100)